



Q/ No 6357.56

1899



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1899

AMERICAN WEBSTER

BOOK No

SECTION

ENGINEERING DEPARTMENT.

THIRTY-THIRD ANNUAL REPORT

OF THE

CITY ENGINEER,

Compliments of

William Jackson,

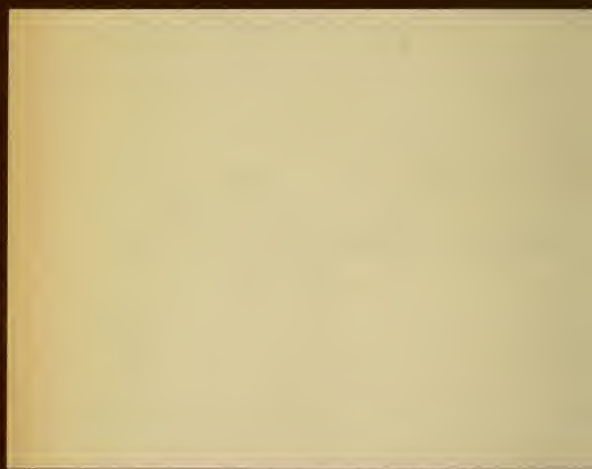
City Engineer.



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BOSTON:

MUNICIPAL PRINTING OFFICE

1900



ENGINEERING DEPARTMENT.

THIRTY-THIRD ANNUAL REPORT

OF THE

CITY ENGINEER,

BOSTON,

FOR THE YEAR 1899.

Printed for the Department.

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Stones & Webster
Dec. 8, 1903.

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ENGINEERING DEPARTMENT, CITY HALL,
BOSTON, February 1, 1900.

HON. THOMAS N. HART,
Mayor of the City of Boston :

SIR, — The following report of the expenses and operation of this department for the year ending January 31, 1900, is submitted :

The duties of the City Engineer include the designing and superintending of the construction of new bridges, retaining-walls, city wharves, and such other public engineering works as the City Council may authorize ; the making of such surveys, plans, estimates, statements and descriptions, and taking such levels as the city government or any of its departments or committees may require ; the custody of all surveys and plans relating to the laying-out, locating anew, altering, widening or discontinuing of streets ; and the new engineering construction for all departments of the city. He must be consulted on all work where the advice of a civil engineer would be of service. The office of the City Engineer was established by ordinance on October 31, 1850, and by chapter 449 of the Acts of 1895.

The Architectural Division of the Public Buildings Department was detached from that department January 13, 1898, and placed under the Engineering Department. The work of this division is that of a consulting or expert force. It may be

called upon by any department for technical advice on matters relating to building, heating or ventilation. Plans or specifications for work to be done, in certain cases, by the Repair Division of the Public Buildings Department, are prepared by this division, which is also charged with a general supervision of the work done by the Repair Division of the Public Buildings Department.

The following is a statement of engineering expenses from February 1, 1899, to January 31, 1900 :

Amount of department appropriation for	
1899-1900	\$78,800 00
Transferred from surplus revenue	69 46
	<hr/>
Amount expended for 1899-1900	\$78,869 46
	<hr/>

STATEMENT OF EXPENDITURES, DEPARTMENT APPROPRIATION.

Object of expenditures :

Salaries :

Engineer, William Jackson,	\$5,862 50	
Assistant Engineer, architect, draughtsmen and assistants	59,527 37	
	<hr/>	\$65,389 87
Instruments, tools, and repairs		3,329 01
Travelling expenses		1,483 08
Furniture and office expenses		3,151 82
Stationery and drawing materials		1,137 33
Printing		525 57
Horse-keeping		895 13
Blue printing and photographing		497 19
Binding and plans		403 25
Books and papers		224 98
Telephone service		884 12
Washing and small supplies		253 47
Typewriting		179 15
Work on Shaw monument		515 49
		<hr/>
		\$78,869 46
		<hr/>

SOUTH UNION STATION.

Items of expenditure by the Engineering Department, from February 1, 1899, to January 31, 1900 :

Engineering and inspection	\$2,017 19
Fence on sea-wall, Dorchester-avenue ex- tension	2,381 00
Bulkhead	1,111 07
Repairs at Federal-street bridge . .	512 44
Displacement of tide water	157 88
	<hr/>
	\$6,179 58
Expended previous to 1899	168,684 90
	<hr/>
	<u>\$174,864 48</u>

FANEUIL HALL BUILDING RECONSTRUCTION.

Appropriation	\$104,500 00
Expenditures from February 1, 1899, to January 31, 1900 :	
Woodbury & Leighton, foundations, etc.	\$75,623 98
Electric wiring	9,258 60
Boston Furnace Co., steam- heating apparatus	4,862 14
Plumbing, gas-piping, etc.,	2,824 06
B. F. Sturtevant Co., motor fans, . .	1,691 50
Furnishings of hall	1,537 01
Engineering	694 18
Storage and repairs on stat- uary and furniture	586 00
Printing	5 79
	<hr/>
	\$97,083 26
Expended previous to 1899,	6,401 75
	<hr/>
	103,485 01
Balance, February 1, 1900,	<hr/>
	<u>\$1,014 99</u>

CHELSEA BRIDGE, WIDENING OPENING NORTH DRAW.

Appropriation, City of Boston, . . .	\$30,000 00
Contribution	26,000 00
	<hr/>
	\$56,000 00
Expenditures from July 15, 1899, to January 31, 1900 :	
Temporary bridge	\$14,329 73
Engineering and inspection,	1,234 26
Advertising	43 71
Printing	10 50
	<hr/>
	15,618 20
Balance, February 1, 1900	<hr/>
	<u>\$40,381 80</u>

MALDEN BRIDGE.

Appropriation	\$200,000 00
Expenditures from April 15, 1899, to January 31, 1900:	
Temporary bridge	\$1,326 00
Engineering and inspection,	480 20
Advertising	105 95
Printing	57 00
	<hr/>
	1,969 15
	<hr/>
Balance, February 1, 1900	\$198,030 85
	<hr/>

ABOLISHMENT OF GRADE CROSSINGS.

Congress Street.

Expenditures from February 1, 1899, to January 31, 1900.
Items of expenditure:

Land taking	\$198,180 00
Draw, foundation, fender piers, etc.	83,348 63
Paving, fences, etc.	52,470 96
Filling	52,284 76
Fixed spans	48,506 62
Bulkheads	20,521 44
Engineering	10,778 83
Congress-street, sea-wall	9,381 98
A and C streets, bridges	8,420 10
Summer-street abutment, piers, etc.	7,700 00
Inspection	4,746 40
Wall at B and C streets	4,500 00
Services, for appraisal land damages, etc.	1,764 82
Watchmen	1,006 92
Advertising	420 38
Sewer construction	308 35
Rent of office	300 00
Printing	257 54
Borings	138 35
Cement tests	25 00

	<hr/>
	\$505,061 08
Expended previous to 1899	342,683 21
	<hr/>
	\$847,744 29
	<hr/>

Dorchester Avenue.

Items of expenditure:

Land damages	\$276,840 00
Boston-street bridge	21,062 66
Swett-street bridge	20,508 02
Paving, fences, etc.	15,484 23
Land takings	12,650 00
Filling	12,081 54
Services: appraisal land damages, etc.	10,171 28
Retaining-walls	9,639 86
Dorchester-avenue bridge	9,044 04
Engineering	6,733 87
Inspection	2,005 69
Sewer construction	939 95
Rent of office	148 75
Printing	128 61
Advertising	96 66
Signs	29 39
	<hr/>
	\$397,564 55
Expended previous to 1899	6,337 20
	<hr/>
	<u>\$403,901 75</u>

BRIDGES.

The annual inspection of all highway and foot-bridges has been made, together with special examinations when notified by the Superintendent of Streets of the progress of repairs.

The management of all the bridges and draws between Cambridge and Boston, by the Acts of 1898, chapter 467, is vested in a board of two commissioners, which now has charge of the following eight bridges, viz.: Canal, Harvard, Prison Point, West Boston, Cambridge street, Essex street, North Harvard street, and Western avenue to Cambridge; one-half the cost of the maintenance of these bridges is paid by each of these cities.

In the list of bridges those marked with a star (*) are over navigable waters, and are each provided with a draw, the openings in which are shown in a table in Appendix A. The widths of the openings have been measured for this report.

I.—BRIDGES WHOLLY SUPPORTED BY BOSTON.

Agassiz road, in The Fens.

Allston bridge, over Boston & Albany Railroad, Brighton.

- Arborway bridge, in Parkway, over Stony brook.
Ashland street, over Providence Division, N. Y., N. H. & H. R.R., West Roxbury.
Athens street, over Midland Division, N. Y., N. H. & H. R.R.
Audubon road, over Boston & Albany Railroad.
Beacon street, over outlet to The Fens.
Beacon street, over Boston & Albany Railroad.
Berkeley street, over Boston & Albany Railroad.
Berkeley street, over Providence Division, N. Y., N. H. & H. R.R.
Bernier-street foot-bridge, in the Riverway.
Berwick-park foot-bridge, over Providence Division, N. Y., N. H. & H. R.R.
Blakemore street, over Providence Division, N. Y., N. H. & H. R.R.
Bolton street, over Midland Division, N. Y., N. H. & H. R.R.
Boylston street, in The Fens.
Boylston street, over Boston & Albany Railroad.
Bridle path in the Riverway, over Muddy river.
* Broadway, over Fort Point channel.
Broadway, over Boston & Albany Railroad.
Brookline avenue, over Boston & Albany Railroad.
Byron street, over Boston, Revere Beach & Lynn Railroad.
* Castle Island foot-bridge, from Marine park, South Boston, to Castle Island.
* Charles-river bridge, from Boston to Charlestown.
Charlesgate, in The Fens, over Boston & Albany Railroad.
Charlesgate, in The Fens, over Ipswich street.
* Chelsea bridge, South, over South channel of Mystic river.
* Chelsea street, from East Boston to Chelsea.
Circuit drive, over Scarboro' pond in Franklin park.
Columbus avenue, over Boston & Albany Railroad.
* Commercial point, or Tenean, Dorchester.
Commonwealth avenue, in The Fens.
* Congress street, over Fort Point channel.
Cornwall street, over Stony Brook, West Roxbury.
Cottage Farm bridge, over Boston & Albany Railroad, Brighton.
Cottage-street foot-bridge, over flats, East Boston.
Dartmouth street, over Boston & Albany Railroad and Providence Division, N. Y., N. H. & H. R.R.
* Dover street, over Fort Point channel.
Ellicott arch, in Franklin park.
* Federal street, over Fort Point channel.

Fen bridge, in The Fens.

Ferdinand street, over Boston & Albany Railroad.

Forest Hills entrance, in Franklin park.

Gold street, over Midland Division, N. Y., N. H. & H. R.R.

Huntington avenue, over Boston & Albany Railroad.

Ipswich street, over Waterway, in The Fens.

Irvington-street foot-bridge, over Providence Division, N. Y.,
N. H. & H. R.R.

* L street, over Reserved channel, South Boston.

Leverett-pond foot-bridge, in Leverett park.

Leyden street, over Boston, Revere Beach & Lynn Railroad.

Linden Park street, over Stony brook.

* Malden bridge, from Charlestown to Everett.

Massachusetts avenue, over Boston & Albany Railroad.

Massachusetts avenue, over Providence Division, N. Y., N.
H. & H. R.R.

* Meridian street, from East Boston to Chelsea.

* Mount Washington avenue, over Fort Point channel.

Neptune road, over Boston, Revere Beach & Lynn Railroad.

Newton street, over Providence Division, N. Y., N. H. & H.
R.R.

Public Garden foot-bridge.

Scarboro'-pond foot-bridge in Franklin park.

Shawmut avenue, over Boston & Albany Railroad and
Providence Division, N. Y., N. H. & H. R.R.

Stony brook, in The Fens.

* Summer street, over Fort Point channel.

Swett street, east of Midland Division, N. Y., N. H. & H.
R.R.

Swett street, west of Midland Division, N. Y., N. H. & H.
R.R.

* Warren bridge, Boston to Charlestown.

West Rutland-square foot-bridge, over Providence Division,
N. Y., N. H. & H. R.R.

Winthrop, from Breed's Island to Winthrop.

Wood Island park foot-bridge, over Boston, Revere Beach
& Lynn Railroad.

II.—BRIDGES OF WHICH BOSTON SUPPORTS THE PART WITHIN ITS LIMITS.

Bellevue street, in the Riverway, over Muddy river.

Bernier-street foot-bridge, in the Riverway, over Muddy
river.

Brookline avenue, in the Riverway, over Muddy river.

Central avenue, from Dorchester to Milton.

* Chelsea bridge, North, over North Channel, Mystic river.

- * Granite bridge, from Dorchester to Milton.
- Longwood avenue, in the Riverway, over Muddy river and Boston & Albany Railroad.
- Mattapan bridge, from Dorchester to Milton.
- Milton bridge, from Dorchester to Milton.
- * Neponset bridge, from Dorchester to Quincy.
- * North Beacon street, from Brighton to Watertown.
- Spring street, from West Roxbury to Dedham.
- Tremont street, in the Riverway, over Muddy river.
- * Western avenue, from Brighton to Watertown.

III. — BRIDGES OF WHICH BOSTON PAYS A PART OF THE COST OF MAINTENANCE.

- Albany street, over Boston & Albany Railroad, Freight Tracks.
- Ashmont street and Dorchester avenue, over Old Colony Division, N. Y., N. H. & H. R.R.
- Boston street bridge, over Old Colony Division, N. Y., N. H. & H. R.R.
- * Canal bridge, from Boston to Cambridge.
- * Cambridge street, from Brighton to Cambridge.
- Chelsea bridge, over the Boston & Maine Railroad.
- Dorchester street, over Old Colony Division, N. Y., N. H. & H. R.R.
- * Essex street, from Brighton to Cambridge.
- Everett street, over Boston & Albany Railroad, Brighton.
- * Harvard bridge, from Boston to Cambridge.
- Harvard street, over Midland Division, N. Y., N. H. & H. R.R., Dorchester.
- * North Harvard street, from Brighton to Cambridge.
- * Prison-Point bridge, Charlestown to Cambridge.
- * West Boston bridge, from Boston to Cambridge.
- West Fourth street, over Old Colony Division, N. Y., N. H. & H. R.R.
- * Western avenue, from Brighton to Cambridge.

IV. — BRIDGES SUPPORTED BY RAILROAD CORPORATIONS.

1st. — Boston & Albany R.R.

- Albany street, over Passenger tracks.
- Harrison avenue.
- Market street, Brighton.
- Tremont street.
- Washington street.

2d. — Boston & Maine R.R., Western Division.

Main street.

Mystic avenue.

3d. — Boston & Maine R.R., Eastern Division.

Main street.

Mystic avenue.

4th. — Boston, Revere Beach & Lynn R.R.

Everett street.

5th. — New York, New Haven & Hartford R.R., Midland Division.

Broadway.

Dorchester avenue.

Fifth street.

Fourth street.

Morton street, Dorchester.

Norfolk street, Dorchester.

Norfolk street, Dorchester.

Second street.

Silver street.

Sixth street.

Third street.

Washington street, Dorchester.

6th. — New York, New Haven & Hartford R.R., Old Colony Division.

Adams street.

Cedar Grove Cemetery.

Freeport street.

Savin Hill avenue.

7th. — N. Y., N. H. & H. R.R., Providence Division.

Albany street.

Beech street, West Roxbury.

Bellevue street, West Roxbury.

Berkeley street.

Broadway.

Canterbury street, West Roxbury.

Castle square.

Centre and Mt. Vernon streets, West Roxbury.

Columbus avenue.

Dartmouth street.

Dudley avenue, West Roxbury.

Harrison avenue.

Park street, West Roxbury.

Washington street.

RECAPITULATION OF BRIDGES.

I.	Number wholly supported by Boston	68
II.	Number of which Boston supports that part within its limits	14
III.	Number of which Boston pays a part of the cost of maintenance	16
IV.	Number supported by railroad corporations:	
1.	Boston & Albany	5
2.	Boston & Maine, Western Division	2
3.	Boston & Maine, Eastern Division	2
4.	Boston, Revere Beach & Lynn Railroad	1
5.	N. Y., N. H. & H. R.R., Midland Division	12
6.	N. Y., N. H. & H. R.R., Old Colony Division	4
7.	N. Y., N. H. & H. R.R., Providence Division	14
	Total	<u>138</u>

Agassiz-road Bridge (in the Fens).

This bridge was built in 1887, of brick and stone masonry. It is maintained by the Park Department, and is in good condition.

Albany-street Bridge (over the Boston & Albany R.R. Freight tracks).

The original structure was built in 1856-57, and rebuilt in 1867-68. The present bridge was built in 1886-87, and is maintained in part by the City of Boston, and in part by the Boston & Albany Railroad.

Attention has been called in the reports for the past three years to the rusty condition of the portion of this bridge below the flooring. As the passenger tracks under the bridge have been removed there is no good reason for longer delaying the work of cleaning and painting the floor beams and bottom chord bars.

The iron railing has rusted so badly that the web plates in some of the sections have entirely disappeared, and the railing is in such condition that it cannot be considered safe. The sidewalk planking is very thin, and should be renewed. It is recommended that this bridge be repaired and painted early this season.

Albany-street Bridge (over Boston & Albany R.R. Passenger tracks).

This is a new structure built the past year over the new location of the tracks of the Boston & Albany Railroad leading to the South Station. The new structure consists of steel-built beams twenty-eight inches deep and about fifty-three feet span, spaced thirty-six inches on centres. Between the beams, arches are turned of two courses of bricks and filled solid with concrete. The wearing surface is of asphalt.

Allston Bridge (over the Boston & Albany R.R., Brighton).

This is an iron bridge, built in 1892. The fences and the ironwork below the flooring should be cleaned and painted as recommended in last year's report, and when the painting is done a new lower floor should be laid.

Arborway Bridge (over Stony brook, in Parkway, near Forest Hills Station).

This is a wooden bridge resting on abutments of vulcanized spruce piles. The stringers and under-planking are of vulcanized hard pine. It was built in 1893, and is maintained by the Park Department. The bridge has been sheathed during the year, and is now in good condition.

Ashland-street Bridge (over Providence Division, New York, New Haven & Hartford R.R., West Roxbury).

The present structure is of iron, and was built in 1875. The fence on the southerly side has been rebuilt during the year, and the bridge is now in good condition.

Ashmont-street and Dorchester-avenue Bridge (over Old Colony Division, New York, New Haven & Hartford R.R.).

This is a wooden bridge formerly maintained by the railroad company. It was lengthened on the Boston side in 1895, and now the city maintains 75 feet of the northerly part. The fence needs painting; the bridge is in good condition.

Athens-street Bridge (over Midland Division, New York, New Haven & Hartford R.R.).

This is an iron bridge, built in 1874. The bridge is in poor condition; it should be stripped and painted, and the upper woodwork should be renewed.

Audubon-road Bridge (over the Boston & Albany R.R.).

This is a steel-plate girder bridge, built in 1893-94, and is now in good condition. It is maintained by the Park Department.

Beacon-street Bridge (over Outlet of the Fens).

This is an iron bridge, built in 1880-81. The deck is in poor condition, and should be renewed, and the sidewalks should be replanked.

Beacon-street Bridge (over Boston & Albany R.R.).

This is an iron bridge, built in 1884-85, widened in 1887-88, and the central roadway further widened in 1890 for the convenience and at the expense of the Street Railway Company. The roadway needs sheathing, and the facias should be repaired, otherwise the bridge is in good condition.

Bellevue-street Bridge (over Muddy River, in Riverway).

This is a segmental masonry arch of 44 feet span and 15 feet rise. It was built in 1893 by the Park Departments of Boston and Brookline, and is maintained jointly by them.

Berkeley-street Bridges (over Boston & Albany R.R., and Providence Division, N. Y., N. H. & H. R.R.).

The bridge over the tracks of the Boston & Albany Railroad was originally built for the Boston Water Power Company and accepted by the city in 1869. The structure over these tracks is a through plate girder bridge, and was built in 1891. During the past year a second bridge of the same type has been built over the new tracks of the New York, New Haven & Hartford Railroad. The south abutment of the old bridge was replaced by a granite masonry pier about 3 feet wide and the span shortened about 8 feet. This work was done by the railroad company. The iron work of the span over the Boston & Albany Railroad needs painting, and the temporary fence at the north-easterly corner of the bridge should be replaced by a more permanent railing.

Berkeley-street Bridge (over Providence Division, New York, New Haven & Hartford R.R.).

This bridge has been reported for a number of years to be in a poor condition, and only such repairs as seemed absolutely necessary to keep the bridge in a safe condition for travel have been made. As the railroad tracks have been

removed it is probable that this bridge can be removed in the near future. It should, however, be watched very closely, and the sheathing kept in good condition.

Bernier-street Foot-bridge (over Bridle Path in Riverway).

This is a semi-circular masonry arch of 38 feet 4 inches span. It was built in 1893, and is maintained by the Park Department.

Bernier-street Foot-bridge (over Muddy River).

This is a segmental masonry arch of 52 feet span and 14 feet rise. It was built in 1893 by the Park Departments of Boston and Brookline, and is maintained jointly by them.

✓ *Berwick-park Foot-bridge (over Providence Division, New York, New Haven & Hartford R.R.).*

This is an iron foot-bridge, erected in 1894. The iron stairs and piers were new, but the trusses and floor-beams were those built for Franklin street in 1883. It is now in good condition.

Blakemore-street Bridge (over Providence Division, New York, New Haven & Hartford R.R.).

This is an iron bridge, built in 1881-82. In the annual reports for 1897 and 1898 the recommendation has been made that this bridge "be painted, and the under planking renewed." This planking is now in such a state that it must be relaid this year to maintain the bridge in a safe condition. It should be painted when the planking is laid.

Bolton-street Bridge (over Midland Division, New York, New Haven & Hartford R.R.).

This is a wooden bridge, built in 1889. The fences should be repaired and painted; otherwise the bridge is in good condition.

Boston-street Bridge (over Old Colony Division, New York, New Haven & Hartford R.R.).

See page 169.

Boylston-street Arch Bridge (in the Fens).

This is a stone arch bridge, built in 1881. It is in good condition.

Boylston-street Bridge (over Boston & Albany R.R.).

This is an iron bridge, built in 1886-88. The ironwork below the floor of the bridge, although painted in 1895, is now very rusty. The sidewalk planking is very thin and should be renewed, and the facias should be repaired.

Bridle-path Bridge (over Muddy River, in the Riverway).

This is a masonry bridge of three arches; the central arch is elliptical in form, with a span of 30 feet and a rise of 9 feet 6 inches; the side arches are semi-circular, 15 feet in diameter. It was built in 1894, and is maintained by the Park Department. It is in good condition.

Broadway Bridge (over Fort Point Channel).

This is an iron bridge. It was built in 1869-71, and the draw and its foundation were rebuilt in 1874-75. The bridge was temporarily strengthened in 1893, to allow electric cars to use it, and the woodwork on the draw was renewed in 1896. Only ordinary repairs have been made; the sidewalks, the lower planking of the main bridge and the fender piers are in poor condition, the draw foundation should be pointed, the fences are out of line, two of the iron columns have been injured by cars, the iron hangers over the railroad are rusty, and should be uncovered and thoroughly examined; owing to the work of building Broadway and Albany-street bridges over the railroad this bridge is not used by the street cars, and during part of the year it was closed to team travel.

Broadway Bridge (over Boston & Albany R.R.).

The iron bridge, built in 1880-81 has been removed during the past year and a new bridge is now under construction. The old southerly abutment was also removed to permit of the new alignment of the tracks leading to the South Station, and three granite piers built to support the southerly ends of the new trusses and the northerly ends of the beams of the new bridge over the tracks of the Providence Division of the New York, New Haven & Hartford Railroad. It is expected that the new structure will be opened for travel early in the summer.

Broadway Bridge (over Providence Division, New York, New Haven & Hartford R.R.).

This is a new structure, built the past year over the tracks leading to the new South Station. This bridge is similar to

that on Albany street over the Boston & Albany Railroad, consisting of 28-inch steel built-beams, about 53 feet span, spaced from 30 to 36 inches on centres, with brick and concrete arches, and an asphalt wearing surface.

Brookline-avenue Bridge (over Boston & Albany R.R.).

This is an iron bridge, built in 1884. It is in good condition with the exception of the wooden facias, which are somewhat rotten, and need repairing generally; the whole bridge should be painted during the coming year.

Brookline-avenue Bridge (over Muddy River, in the Riverway).

This is a semi-circular masonry arch of 15 feet span. It was built in 1892 by the Park Departments of Boston and Brookline, and is maintained by them jointly.

Byron-street Bridge (over Boston, Revere Beach & Lynn R.R.).

This is a wooden bridge, built in 1889. The sidewalks and bulkheads need repairing, and the nests under the bridge made by the English sparrows should be removed; otherwise the bridge is in fair condition.

Cambridge-street Bridge (from Brighton to Cambridge).

This is a wooden pile bridge with a wooden leaf draw. It was rebuilt in 1884; the draw was rebuilt in 1891. The bridge is in the care of the Commissioners for the Boston and Cambridge bridges, and the city pays one-half the cost of maintenance. Last fall the Boston Elevated Railroad Company laid a second track across the bridge, adding two new draw arms and a header to each leaf of the draw; some of the channel piles were strengthened, and the decks on the Boston side of the main bridge and draw were repaired. On the Boston side the abutment, pier, and fender-guard need repairing, and some of the deck planking needs renewal; one draw arm on the Cambridge side should be renewed.

Canal, or Craigie's Bridge.

This is a wooden pile bridge, with a wooden turn-table draw. The city pays one-half the cost of maintenance. The bridge was originally built in 1808, was rebuilt in 1852, and again rebuilt and widened in 1874. The bridge is in the care of the Commissioners for the Boston and Cambridge

bridges. The wharf has been strengthened by the addition of a few timbers, but it is still in a poor condition; some of the paving has been relaid, new shafting furnished, and general repairs made. The sidewalks, sidewalk bulkheads, and fencing that have not recently been rebuilt are poor, and need rebuilding; additional stringers are needed near the draw, and some pile work is needed near the ends of the bridge; some of the spur-shores need refitting; the roadway pavement needs repairing; the up-stream fender-guard is in a very poor condition; the draw, draw-pier, and wharf need extensive repairs, and the bridge should be painted.

Castle Island Foot-bridge (from Marine Park to Castle Island).

This is a temporary foot-bridge, built in 1892, and is maintained by the Park Department. It connects the Marine park with Castle Island, and is furnished with a draw, so that if desired by the United States authorities, the island can be cut off from the shore. Repairs are needed on the fence and planking, and the bridge should be painted; otherwise the bridge is in fair condition.

Castle-square Bridge (over Providence Division N. Y., N. H. & H. R.R.).

For the purpose of supporting the streets over the extension of the tracks of the New York, New Haven & Hartford Railroad to the South Station a two-span bridge has been built extending from Chandler street across Castle square and down Castle street to Village street, a total length of about 576 ft. The bridge as built consists of 18-inch steel I-beams of about 27 ft. clear span spaced from 2 to 3 ft. on centres and brick arches turned between the beams, the whole filled solid with concrete. The wearing surface is of asphalt, two inches in thickness. The southerly abutments of the bridges on Ferdinand and Tremont streets were removed, and a continuous brick pier 3 ft. in width built to support the southerly ends of these bridges, as well as the northerly ends of the beams of this bridge. An intermediate brick pier 2 ft. in width was also built the entire length of the bridge.

Central-avenue Bridge (over Neponset River, Dorchester Lower Mills).

This is an iron bridge, and was built in 1876. The city maintains the part within its limits. The bridge has been painted, and breaks in the deck have been repaired. The

woodwork of the roadway is in poor condition; the bridge should be stripped, the upper part of the floor-beams should be cleaned and painted, and the woodwork renewed.

Charles-river Bridge (from Boston to Charlestown).

This is a wooden pile bridge with an iron draw. The present bridge was built in 1854-55; the draw was built in 1870. A contract has been made for removing that part of the bridge between the harbor lines as authorized by the Acts of the Legislature, and the bridge was closed to travel December 22. The ends of the bridge are in fair condition, but will require some repairing near the harbor lines.

Charlesgate Bridge (in the Fens, over Boston & Albany R.R.).

This is an iron bridge, built in 1881-82, and is maintained by the Park Department. It has been closed part of the year on account of the construction of the bridge over Ipswich street. It is in good condition.

Charlesgate Bridge (in the Fens, over Ipswich Street).

See page 164.

Chelsea Bridge (over Boston & Maine R.R.).

This is an iron bridge, built by the Boston & Maine Railroad Company in 1894, and is over the railroad location. The surface of the bridge is maintained by the city; the remainder by the railroad company. The wheel-guard on the bridge is too narrow, the fences need repairing and painting; otherwise the bridge is in good condition.

Chelsea Bridge, North (over North Channel, Mystic River).

The city maintains the part within its limits. The original structure was built in 1802-3. The piles under the main bridge were driven in 1880. The upper part of the bridge, the draw and draw foundation, were built in 1895. General repairs have been made. The bridge needs painting, and the sidewalk planking needs small repairs; the old fender-guard is in poor condition; otherwise the bridge is in good condition. The drawway of this bridge will soon be widened from forty-five feet to sixty feet, and while the work is being done travel will be carried around the draw on a temporary bridge. See page 164.

Chelsea Bridge, South (over South Channel, Mystic River).

This is a pile bridge with an iron draw. The original bridge were built in 1802-3. The piles of the present bridge were driven, and the draw was built in 1877. That part of the bridge above the girder caps was rebuilt at a higher grade, and the draw was raised in 1895. The fencing has been painted, the waterways and piers repaired, and other general repairs have been made. The fender-guards and the top of the pier are in poor condition, and the water ways need repairing; the sidewalk stringers and facias on the draw need renewal, and the iron brackets need repairing; otherwise, the bridge is in good condition.

Chelsea-street Bridge (from East Boston to Chelsea).

This is a wooden pile bridge, with an iron swing draw; the original bridge was built in 1834; was rebuilt in 1848, 1873, and again in 1894-95. The iron fence on the draw needs painting, and the wooden fence needs repairing; the bridge is in good condition.

Circuit-drive Bridge (over Scarboro' Pond, in Franklin Park).

This is an elliptical masonry arch of 30 feet span and 6 feet 3 inches rise. It was built in 1893, and is maintained by the Park Department.

Columbus-avenue Bridges (over Boston & Albany R.R. and Providence Division N. Y., N. H. & H. R.R.).

The bridge over the Boston & Albany Railroad was built in 1876-77. The old south abutment has been replaced during the year by a new pier which now supports the north end of the new bridge over the tracks of the N. Y., N. H. & H. R.R. as well as the south end of the old bridge over the B. & A. R.R. The old bridge has been shortened about eleven feet at its south end, the work being done by the railroad company and with the exception of the absence of paint on the new steel-work added in making necessary changes, the construction has been done in a very satisfactory manner.

The new bridge over the extension of the tracks to the South Station is in two spans of about twenty-six feet, in the clear. It consists of 18-inch I-beams spaced from two to three feet on centres, with brick and concrete arches and an asphalt pavement. The centre pier is two feet wide, built of brick with blue-stone belt courses.

Commercial Point or Tenean Bridge (Dorchester).

This is a wooden pile bridge with a wooden leaf draw, built in 1875. This bridge is in poor condition; the draw and most of the woodwork above the piles should be renewed.

Commonwealth-avenue Bridge (in the Fens).

This is an iron bridge, and was built in 1881-82. It has been sheathed during the year, and is now in good condition.

Congress-street Bridge (over Fort Point Channel).

This is a wooden pile bridge with an iron turn-table draw on a stone foundation, and was built in 1874-75. Some of the sidewalk near the Boston end and part of the roadway flooring are in very poor condition. The track circles are much worn, the roadway paving and the fender-guards are in poor condition, the spur shores on the pier need refitting. The draw should be provided with new tracks, the lower chord should be uncovered, examined, repaired if necessary, and be painted; the centre of the bridge and part of the gutter and sidewalk should be uncovered, the poor timber and planking should be renewed, and the bridge repaved, and repairs are needed on the cross bracing, fender-guards, iron on channelway, ends of draw and draw landings; the sidewalk on the draw needs renewal. Part of the top of the pier has been rebuilt, and the whole top except a small portion near the draw has been rebuilt within two years. Work has commenced on building two shelters over the sidewalk near the draw and painting the fence.

In connection with the work of abolishing the grade crossing on Congress street, a sea-wall has been built twenty feet outside the northerly line of this bridge, between the harbor line and the abutment, on the Boston side of the channel, and the work of filling solid this portion of the bridge is now in progress.

Cornwall-street Bridge (over Stony Brook, West Roxbury).

This is a small wooden bridge, built in 1892. It is in good condition.

Cottage Farm Bridge (over Boston & Albany R.R., Brighton).

The present bridge was built in 1895-96. With the exception of the plate girders on the outside lines of the bridge, and some special construction under the sidewalks, the super-

structure is composed of twenty inch steel beams filled between with brick arches and Portland cement concrete, on which is a wearing surface of Sicilian rock asphalt. The sheet lead on the lower flanges of the beams has been torn off in places. The bridge is in good condition.

Cottage-street Foot-bridge (over flats, East Boston).

This is a wooden pile bridge, built in 1889, for foot travel only. Some of the piles are commencing to decay. The cross-bracing is poor, and should be renewed, where necessary; the flooring and the fences at the ends of the bridge need repairing; otherwise, the bridge is in fair condition.

Dartmouth-street Bridges (over Boston & Albany R.R. and Providence Division, N. Y., N. H. & H. R.R.).

The bridge over the Boston & Albany Railroad was built in 1878-79. Very extensive changes have been made in this bridge during the past year by the railroad companies necessitated by the new location of the tracks of the N. Y., N. H. & H. R.R., leading to the South Station and the abandoning of the tracks connecting this road with the B. & A. R.R. The old south abutment and the pier just north of the main line of the B. & A. R.R. were entirely removed, and a new face added to the old north abutment so that it should be parallel with the tracks of the latter road. The old plate girder span over the tracks connecting the two roads was removed entirely, and the main truss span was moved north-easterly from its original position, 33 feet 8 inches along the line of the street and lowered eighteen inches, a new abutment being built at the proper location to support the southerly end of this bridge and the northerly end of the new bridge over the tracks of the N. Y., N. H. & H. R.R.

This bridge should be painted at once. The flooring should be removed, and a careful examination of the stringers made to ascertain if any have been injured during the moving. The sidewalk plank should be renewed.

The new bridge is built of 15-inch steel I-beams, spaced 2 feet 6 inches on centres under the roadway and 3 feet 6 inches on centres under the sidewalks, supported on steel columns, the span of the beams being from fourteen to seventeen feet in the clear. Between the beams arches are turned, built of two courses of brick and filled solid with concrete, on which rests a wearing surface of asphalt, two inches in thickness.

Dorchester-street Bridge (over Old Colony Division, New York, New Haven and Hartford R.R.).

This is an iron bridge, built in 1869. It is principally maintained by the railroad company, and was repaired and put in fair condition in 1893; it is, however, too light a structure for the street-car traffic now passing over it.

Dover-street Bridge (over Fort Point Channel).

This was originally a wooden pile bridge, built in 1805, rebuilt in 1858-59, and again in 1876. In 1893-94, upon the abolition of the grade crossing of the Old Colony Railroad, the present iron structure resting on masonry piers was built. The Boston Electric Light Company have placed a conduit under the pier, channel, and bridge; part of the conduit is carried by the bridge and part is supported on new piling. This bridge needs painting, and work has already been commenced on it. The sidewalk planking on the draw is poor, and should be renewed. The upper parts of the old draw piers are in poor condition, and should be rebuilt. The planking on the channelway needs repairing; some new track is needed for the draw; the rack should be realigned in order that the draw may be reversed; the piers need repointing.

Ellicott-arch Bridge (in Franklin Park).

This is a semi-circular masonry arch of 17 feet 6 inches span. It was built in 1889, and is maintained by the Park Department.

Essex-street Bridge (from Brighton to Cambridge).

This bridge is in the care of the Commissioners for the Boston and Cambridge bridges; the city pays one-half the cost of maintenance. It is a wooden pile bridge, with a wooden leaf draw, and was originally built in 1850; the draw was rebuilt in 1891; the woodwork above the piles was renewed in 1896. The draw has been redecked, and general repairs have been made. The up-river pier is in very poor condition, the top work needs renewal; and the cross bracing needs repairing; the bridge should be painted; one Samson post needs additional fastening; the draw-way should be replanked; the curb irons on the Cambridge side need regulating, and the staging under the bridge on the Boston side needs strengthening.

Everett-street Bridge (over Boston & Albany R.R., Brighton).

This is an iron bridge, built in 1891, by the Boston & Albany Railroad Company. The bridge needs painting and slight repairs to some of the woodwork.

Federal-street Bridge (over Fort Point Channel).

This is a wooden pile bridge, with a double retractile iron draw, and was rebuilt in 1891-92. The entire bridge was painted last fall; the track timbers, which were forced up by the pile driving done by the Boston Terminal Company, have been trimmed, the trucks have been cleaned without being taken apart. The cross bracing irons on the waterway, and the sills on the pier need repairing; the sidewalks and central way on the draw need replanking, and a set of spare trucks should be provided. The draw works much easier than it did, but should it work hard during the hot weather the trucks should be taken apart and cleansed, and some of the rails may have to be realigned.

Fen Bridge (in the Fens).

This bridge was built in 1891-92. It is in good condition.

Ferdinand-street Bridge (over Boston & Albany R.R.).

This is an iron bridge, built in 1892.

The span of this bridge has been shortened on account of changes in location of railroad tracks, about three feet being cut from its southerly end. The old south abutment was replaced by a brick pier three feet wide which also supports the northerly end of the new bridge at Castle square. This work was done by the railroad companies. The fences of the bridge have been painted during the year, but the fence on the retaining-wall adjoining the bridge at its north-westerly end still remains in a damaged condition. The lower planking of the bridge is poor, and should be renewed.

Forest Hills Entrance Bridge (in Franklin Park).

This bridge was built in 1894-95. It is maintained by the Park Department, and is in good condition.

Gold-street Bridge (over Midland Division, New York, New Haven & Hartford R.R.).

This bridge was built in 1895, replacing a foot-bridge which was built in 1890. The fences are badly cut and dirty, and should be repaired; the bridge should be painted,

and the roadway should be resheathed; the walls need some repointing.

Granite Bridge (from Dorchester to Milton).

This is a wooden pile bridge, with a wooden leaf draw. The city maintains the part within its limits. The bridge was originally built in 1837. The bridge has been redecked with 4-in. hard pine, and a new header has been put on the draw. The sidewalk should be patched, the draw chain needs refastening, the up-river pier needs replanking, the abutment should be repaired, and the bridge should be painted.

Harrison-avenue Bridges (over Boston & Albany R.R. and Providence Division, New York, New Haven & Hartford R.R.).

The present bridge over the Boston & Albany Railroad tracks was built in 1886. During the past year the south abutment was removed, and a granite pier 3 feet wide built, which supports the south end of the old bridge and the north end of the new bridge over the tracks of the Providence Division of the New York, New Haven & Hartford Railroad. About two feet was cut off from the south end of the old bridge, and that end raised about 12 inches. The northerly end was raised about 6 inches. The new bridge is a through plate girder bridge, similar to that over Washington street, with the exception of the floor beams, which in this bridge are about 20 inches deep and about 33 feet long.

Harvard Bridge (from Boston to Cambridge).

This is an iron bridge, with an iron turn-table draw, and was built in 1887-91. The bridge is in the care of two Commissioners, one appointed from Boston, and one from Cambridge, and the expense of maintenance is borne equally by each city. The roadway has been sheathed during the year, and some painting done.

Harvard-street Bridge (over Midland Division, New York, New Haven & Hartford R.R., Dorchester).

The sidewalks are supported by the city, the roadway by the railroad; the brickwork under one of the walks is in poor condition; otherwise the bridge is in good condition.

Huntington-avenue Bridge (over Boston & Albany R.R.).

This is an iron bridge. It was built in 1872, and in 1876-77 the abutments were rebuilt and the bridge widened

by the addition of two new girders. In 1896, in consequence of changes in the grade of the avenue, the floor was entirely rebuilt, the ironwork thoroughly cleaned and painted, and new girders added for supporting the water-pipes. The bridge is in good condition.

Ipswich-street Bridge (over Waterway in the Fens).

This bridge was built in 1898, and consists of steel beams of depths varying from 10 inches in the gutter to 20 inches on the outer lines of the bridge; they are spaced from 2 feet to 3 feet 2 inches apart; the spaces between the beams and above them to within $2\frac{1}{2}$ inches of the surface of the street are filled with Portland cement concrete; sheets of expanded metal are imbedded in the concrete 2 inches above the under surface, this surface being flush with the bottoms of the beams; on top of the concrete an asphalt covering was laid $2\frac{1}{2}$ inches thick. There is a sidewalk 8 feet in width on the southerly side of the bridge, but none on the northerly side, a curb being placed on this side 1 foot from the outer line. The depth of the bridge is 20 inches on the outside lines, 19 inches at the sidewalk curb and 14 inches in the gutter. The surface of the bridge is 61 feet in length by 50 feet in width.

Irvington-street Foot-bridge (over Providence Division, New York, New Haven & Hartford R.R.).

This is an iron foot-bridge, built in 1892, and is now in good condition.

L-street Bridge (over Reserved Channel, South Boston).

This is a wooden pile bridge, with an iron retractile draw. It was built in 1892. The under part of the draw and the houses have been painted. Some of the pier plank and fencing need refastening, and two piles in the fender-guard need renewal. The bridge is in good condition.

Leverett-Pond Foot-bridge (in Leverett Park).

This is a segmental masonry arch of 24 feet span and 5 feet 5 inches rise. It was built in 1894, and is maintained by the Park Department.

Leyden-street Bridge (over Boston, Revere Beach & Lynn R.R.).

This is an iron bridge, built in 1889. The roadway is generally very dirty, and should be cleaned oftener. The

hand-rails should be painted; otherwise the bridge is in good condition.

Linden Park-street Bridge (over Stony Brook).

This is a wooden bridge, built in 1887. The sidewalk planking is very thin, and should be renewed, and the entire bridge painted.

Longwood-avenue Bridge (over Muddy River and Boston & Albany R.R.).

The original structure was built in 1857, and rebuilt in 1877. During the past year the work on the new masonry bridge has been completed. The structure consists of a large arch of 100 feet span crossing Muddy river and a portion of the park, and a smaller arch of about 31 feet span crossing the Boston & Albany Railroad. The length of the masonry portion of the bridge is about 220 feet, and the width between parapet walls about 56 feet. The bridge was built by the Park Departments of Boston and Brookline, and is maintained jointly by them.

Malden Bridge (from Charlestown to Everett).

The present structure was built in 1875, and the draw in 1892. Only general repairs have been made. The bridge is in poor condition, and will soon be rebuilt. See page 171.

Massachusetts-avenue Bridge (over Boston & Albany R.R.).

This is an iron bridge, built in 1876. It was thoroughly repaired in 1893, with the exception of the wooden fences. These fences are now in very poor condition, and should be rebuilt, and the middle and westerly sections of the roadway should be redecked.

Massachusetts-avenue Bridge (over Providence Division, New York New Haven & Hartford R.R.).

This is an iron bridge, built in 1876. It is in good condition with the exception of the lower planking and sidewalk planking; these should be renewed.

Mattapan Bridge (from Dorchester to Milton).

The city maintains the part within its limits. This is an old iron bridge, and is in a dangerous condition, and it should be replaced by a stone bridge; only general repairs have been made.

Meridian-street Bridge (from East Boston to Chelsea).

This is a wooden pile bridge, with a wooden turn-table draw on a pile foundation. The original structure was built in 1858. It was rebuilt soon afterwards, and was widened and rebuilt in 1884, excepting the draw, which was built in 1875-76. The chords of the draw were rebuilt in 1896. The waterways are in poor condition, some of the piles should be replaced, the ribbons, caps, planking and irons need renewal in places; the wharf and part of the draw should be redecked, the facias on the sidewalks are getting poor, the stringers and bulkhead at the Boston end of the channel need strengthening, the draw should be furnished with some new rack, the track is getting much worn, one of the rods under the draw should be repaired, and one pile under the sidewalk should be spliced.

Milton Bridge (from Dorchester to Milton).

The city maintains the part within its limits. The original structure is very old. It was widened in 1871-72. The older part of this bridge was built of stone, and the widening is an iron structure on stone columns. The bridge should be painted, the sidewalk planking should be renewed, and additional stringers should be placed under the up-stream sidewalk; one of the cap-stones over the first waterway is cracked.

Mt. Washington-avenue Bridge (over Fort Point Channel).

This is a wooden pile bridge, with an iron draw. It was built in 1854, and rebuilt in 1870-71; this bridge is in poor condition. It has the only draw of importance in the city that is moved by hand-power; the draw-pier is in poor condition, and is so low that it is covered with water at every high course of tides. The sidewalks, draw landings, bracing on bents, roadway pavement and one of the fender-guards are in very poor condition, the waterways are out of repair, the foundation of the house is in poor condition. The bridge should be rebuilt.

Neponset Bridge (from Dorchester to Quincy).

The city maintains the part within its limits. The original structure was built in 1802, and the present one in 1877. The draw is too heavy to be handled by hand, and should be replaced by a turn-table draw. Only general repairs have been made. The up-stream draw arm has been

struck and bent, and a hole was made through the web. The piers and fender-guards need extensive repairs, and the draw should be painted.

Neptune-road Bridge (over Boston, Revere Beach & Lynn R.R.).

This is an iron bridge, built in 1887-88, and is maintained by the Park Department. The roadway plank should be renewed; otherwise the bridge is in good condition.

Newton-street Bridge (over Providence Division, New York, New Haven & Hartford R.R.).

This is an iron bridge, built in 1872. It is in good condition, excepting the concrete sidewalks, which should be resurfaced.

North Beacon-street Bridge (from Brighton to Watertown).

The city maintains the part within its limits. This is a wooden pile bridge with a wooden leaf draw. The original structure was built in 1822, and the present one in 1884. The bridge is in poor condition; the old draw arms, which were not renewed in 1898, are weak, some of the piles and deck planking need renewal, the stringers have begun to decay; the wheel-guard needs repairing; the painting and the pier are in poor condition.

North Harvard-street Bridge (from Brighton to Cambridge).

The city maintains the part within its limits. This bridge was originally built in 1662, and was rebuilt, except the piling, in 1879; the draw was built in 1891. The bridge is in the care of the Commissioners for the Boston and Cambridge bridges; the city pays one-half the cost of maintenance. A new house has been built on the Boston side, and ordinary repairs have been made. The abutment, piling, roadway plank and fence are in poor condition; the counter-balances need additional rear strikers. This bridge should be replaced with a new and wider structure, more in keeping with the improvements recently made in the vicinity.

Prison-Point Bridge (from Charlestown to Cambridge).

This bridge was originally built in 1833, and the present structure was built in 1876-77. It is a wooden pile bridge, with an iron leaf draw. The bridge is in the care of the Commissioners for the Boston and Cambridge bridges; the

city pays one-half the cost of maintenance. It is in poor condition. Two sidewalks have been rebuilt. The draw, machinery, hinges, two sidewalks and the woodwork on the main bridge near the channel need thorough repairing; the top of the pier also needs repairing; this bridge will probably be soon rebuilt at a higher grade, owing to the abolishing of the grade crossing of the Boston & Maine Railroad.

Public Garden Foot-bridge.

This is an iron bridge. It was built in 1867, and was thoroughly repaired in 1887. The bridge is now in fair condition, but will need resheathing this year.

Scarboro' Pond Foot-bridge (in Franklin Park).

This is an elliptical masonry arch of 40 feet span and 8 feet 3 inches rise. It was built in 1893, and is maintained by the Park Department.

Shawmut-avenue Bridge (over Boston & Albany R.R., and Providence Division, New York, New Haven & Hartford R.R.).

This is an iron bridge, built in 1871, although it was cleaned and painted in 1897, parts of it, particularly over the main tracks, are very rusty. The only changes made at this bridge to accommodate the new arrangement of tracks leading to the South Station were the raising of the southerly end 10 inches, and replacing the old centre pier, which was 6 feet wide, with a new one only 3 feet wide. The recommendation made in the annual reports for the last three years is again renewed, that the cast-iron covering over the sidewalk girders, which has not been removed since the bridge was built, to be taken off, so that a thorough examination can be made of the condition of these girders.

Silver-street Bridge (over the Midland Division of the N. Y., N. H. & H. R.R.).

This bridge was closed to team travel on account of its dangerous condition, during part of the year; it was rebuilt and opened to travel last fall.

Spring-street Bridge (from West Roxbury to Dedham).

This is a stone bridge. The city maintains the part within its limits. It is in good condition.

Stony-brook Bridge (in the Fens).

This is an ornamental brick arched bridge, with stone facings, built in 1891-92, and maintained by the Park Department. It is in good condition.

Summer-street Bridge (over Fort Point Channel).

See page 165. (Congress-street Grade Crossings.)

Swett-street Bridges (over South Bay Sluices).

These are wooden bridges, built in 1875, as temporary structures; the westerly bridge was redecked in 1898 and, except the wing bulkheads, is in fair condition. The easterly bridge is in very poor condition, and extensive repairs should be made on it immediately. Owing to the work of abolishing grade crossings this bridge has been practically closed to travel for some time, and the piling should be strengthened before travel is resumed.

Tremont-street Bridge (over Muddy River).

This is a semi-circular masonry arch of fifteen feet span. It was built in 1893, and is maintained by the Park Departments of Boston and Brookline.

Warren Bridge (from Boston to Charlestown).

This is a wooden pile bridge, with a double retractile iron draw. The present structure was built in 1883-84. Only general repairs have been made. The track timbers, fender-guards, upper parts of the pier and wharves, the planking on the waterway, the sidewalk bulkheads and the fencing are in poor condition; the planking on the sidewalks is poor in places; the curbs on the draw should be straightened. Some of the piles under the wharf supporting the draw tenders' house are broken, and the concrete walks on the Charlestown side of the draw need repairing.

Washington-street Bridges (over Boston & Albany R.R. and Providence Division, N. Y., N. H. & H. R.R.).

The present bridge over the B. & A. R.R. tracks was built in 1870, excepting the sidewalk girders which were put in place in 1897. During the past year the south abutment was taken down, and a new granite pier built, three feet wide. The old bridge was moved about one foot southerly, and raised about nine inches.

The new bridge over the tracks of the Providence Division of the N. Y., N. H. & H. R.R., which rests at its north-erly end on the new pier, is a through plate-girder bridge, consisting of four lines of girders six feet deep and fifty-four feet span over all. The roadway girders are spaced thirty-three feet on centres, and the roadway flooring is supported by floor-beams sixteen and one-quarter inches deep, spaced thirteen feet on centres. The flooring consists of two courses of planking, the lower one being four inches thick, and the upper one two inches. The stringers are 4 inches by 12 inches, except under the street-car rails, where two 8 inches by 14 inches are used, all being of hard-pine timber.

West Boston Bridge (from Boston to Cambridge).

This is a wooden pile bridge, with a wooden turn-table draw. The bridge was originally built in 1792-93, was rebuilt in 1854, and repaired in 1871; it is in the care of the Commissioners for the Boston and Cambridge bridges. This bridge was closed to travel Oct. 19, 1899, the travel going over the temporary highway bridge, which was built in 1898-99 to accommodate the travel until a new bridge should be built to replace West Boston bridge. See page 171.

West Fourth-street Bridge (over Old Colony Division, New York, New Haven & Hartford R.R.).

In 1893-94 the grade crossing of the Old Colony Railroad on this street was abolished, and an iron bridge built, extending from the end of Dover-street bridge at the South Boston side of Fort Point channel to the easterly line of Foundry street. The surface is maintained by the city, the rest of the structure by the railroad company. The sidewalk planking and the lower planking on the roadway are in poor condition, and should be renewed this year. The ironwork needs painting.

West Rutland-square Foot-bridge (over Providence Division, New York, New Haven & Hartford R.R.).

This is an iron foot-bridge, built in 1882; it is now in good condition, except the planking which should be renewed this year.

Western-avenue Bridge (from Brighton to Cambridge).

The present bridge was built in 1879-80, and the draw in 1891. It is in the care of the Commissioners for the Boston and Cambridge bridges, and the city pays one-half the cost

of maintenance. The Boston Elevated Railroad Company put a second track across the bridge in the fall, adding four new draw arms and renewing the headers; six stringers and the cap at the draw landing on the Boston side, the planking on the Boston half of the draw, and some of the roadway planking were also renewed. The main bridge on the Cambridge side is in good condition; the house on the Cambridge pier has been removed; the planking on the piers and waterway needs repairing. On the Boston side, some of the piling needs strengthening, the fender-guard should be rebuilt, and the deck plank needs renewal in part; the draw piers are too short.

Western-avenue Bridge (from Brighton to Watertown).

The city maintains the part within its limits. This is a wooden pile bridge, with an iron draw, and was rebuilt in 1892-93. The Watertown end of the bridge has been painted. The draw and its bearings should be adjusted, and scupper-holes should be made in the flooring of the draw foundation. The casting, which supports the screw at the end bearing, on the up-stream end on the Watertown side, is cracked.

Winthrop Bridge (from Breed's Island to Winthrop).

This is a pile bridge without a draw. It was originally built in 1839; it was rebuilt in 1851, and was extensively repaired in 1870. This is an old bridge, and is in poor condition; the caps need additional fastenings; a few bolsters and stringers need strengthening, and some new piles are needed immediately to replace others that have been destroyed by the limnoria. The fences should be repaired, and the sidewalk planking should be renewed.

Wood Island Park Foot-bridge.

This is a new steel foot-bridge, built during the years 1898 and 1899, and connects Prescott street, East Boston, with Wood Island Park, spanning the tracks of the Boston, Revere Beach & Lynn Railroad.

A flight of wooden steps, supported by iron stringers and columns, leads from Prescott street to the bridge. From the top of this flight of stairs the railroad is spanned by two riveted double triangular trusses, each 4 feet 6 inches deep, 33 feet 6 inches long and spaced 8 feet apart, supported at each end by steel columns resting on stone foundation piers.

The rest of the bridge is made up of two spans of 10-inch steel I-beams, each span being 18 feet 7½ inches long, and supported by steel columns on stone foundations.

The flooring consists of five-inch steel I-beams each 11 feet 3 inches long, laid crosswise of the bridge, and upon these are laid the one and one-half inch hard-pine floor plank. An iron gas-pipe fence is built the entire length of both sides of the bridge, and there are two electric light posts at each end of the bridge.

The work was done by the Boston Bridge Works; the total cost of construction being \$3,126.90. The stone piers need pointing. The bridge is in good condition.

Bridges wholly Supported by Railroad Corporations.

The bridges maintained by the several railroad companies are in good or fair condition, with the exceptions noted.

Most of the railroad bridges over the Midland Division, N. Y., N. H. & H. R.R., in South Boston, are in need of repairs; the stringers should be examined by removing the planking, and the woodwork should be renewed where necessary. Norfolk-street bridge, near the Dorchester station, over the same railroad, has been repaired in part, but is still in poor condition.

Widths of Draw-Openings.

The widths of draw-openings in the bridges over tide-water in this city have all been remeasured for this report, and will be found in Appendix A.

SURVEYING DIVISION.

The work of the Surveying Division during the year ending January 31, 1900, has been of the usual miscellaneous character.

The work of this division in its relation to the Street Department has consisted in giving lines and grades on streets under construction by the department.

The construction of Commonwealth avenue has engaged the attention of one party continuously for six months. The work has involved an entire reconstruction from Warren street to Chestnut Hill avenue, including two roadways, car reservation and grass-plot, as well as a complete system of sewer and water-pipes. The work is nearly completed, except a ledge which remains to be blasted out near Chiswick road.

Lines and grades have been furnished for the construction of Talbot avenue, which is now completed. Some work has been done on Blue Hill avenue, between Walk Hill street and Mattapan.

Two hundred and six petitions to lay artificial stone sidewalks have been reported upon to the Superintendent of Streets.

The amount of edgestone required for one hundred and forty-nine estates has been furnished to the Paving Division.

In seventy-three cases the Paving Division has been notified of the necessity of resetting edgestone on account of artificial stone sidewalks to be laid.

Forty-two petitions for permits to construct coal-holes, bulkheads, and sidewalk areas have been examined and reported upon to the Superintendent of Streets.

Ninety-one petitions, calling for eighty-seven catch-basins, were referred by the Sewer Division and reported upon.

Locations were furnished the Sewer Division for construction purposes of nine hundred and forty-three catch-basins on one hundred and sixty different streets.

Some of the more important surveys and plans made for the Street Commissioners, are as follows: Morton street widening to eighty feet, from Canterbury street, West Roxbury, to a point near Sanford street, Dorchester; Walnut avenue widening, from Columbus avenue to Sigourney street; Cambridge street, Brighton, a widening to eighty

feet, from Union square to Washington street; Rutherford avenue, Charlestown, from Chapman street to City square, including Devens and Bow streets, making a sixty-foot street; Alford street, from the Charlestown playground to the Everett line, including the Malden bridge widening, to sixty feet; Atlantic-avenue extension, from Kneeland street over the Terminal grounds, and the Fort Point Channel to Dorchester avenue.

An assessment plan of Huntington avenue has been prepared, covering the entire length from Copley square to the Brookline line.

The location and grades of twenty private streets submitted to the Street Commissioners by property owners, asking for permission to open the same into public ways, were examined and favorably reported upon.

Two hundred and three plans and profiles representing a total length of twenty-five and seven-tenth miles, showing 1,085 buildings, property owners' names, established grades, areas of land taken or to be taken for street widenings or relocations, public alleys, etc., were completed for the Street Laying-out Department.

Plans were made of the streets centreing near the new Charlestown bridge, for the purpose of revising the grades affected by the approach to the bridge on the Boston side.

Plans and profiles were made of Wheeler street, Corning street, Kirkland street, Porter street, and Pleasant street, in Boston proper, and Dana street, Zeigler street, Warren street and Dudley street in Roxbury, for the purpose of revising their grades necessitated by the construction of the elevated railroad.

Plans are now in progress for the purpose of revising grades in connection with the change of location of the New York, New Haven & Hartford Railroad, between Dartmouth street and the South Terminal.

Acting under the provisions of chapter 426 of the Acts of 1897 and amendments thereto, three surveying parties have been engaged in preparing plans for brook and sewer takings.

These plans cover a total length of about 16,000 feet, or three miles.

About four miles of takings made in former years have been staked out during the year.

The division has been called upon to give lines and grades for the building of walls around Franklin Park and the Arnold arboretum.

Other work for the Park Department includes a survey of land takings for an addition to Chestnut Hill Park, Brighton,

and a survey of Jeffries Point, East Boston, for a proposed playground.

The work of the Street Watering Division of the Street Department has been extended over the whole city, for the purpose of which the frontages of eleven thousand and eighty estates, covering a distance of two hundred and sixteen miles, have been furnished by this division.

Surveys and plans have been made for school purposes for the taking of land for additions to the Hancock School, in Boston proper, and the Warren School, in Charlestown; also for new school lots on Parker street, Roxbury, and Morton street, at the corner of Norfolk street, Dorchester.

Plans involving surveys for other public purposes, include an engine-house lot, on Warren avenue, Boston proper; a bath-house lot, on Magnolia street, Dorchester, and an addition to the South ferry, on Lewis street, East Boston.

Acting under authority of chapter 433 of the Acts of 1899 (which requires that the Street Commissioners shall forthwith, after passing an order to lay-out and construct a public highway, estimate the value of any benefit and advantage, beyond a general advantage to all real estate in said city, to be received from the carrying out of said order by so much of the several parcels of land as is situated within one hundred and twenty-five feet of said highway), thirty-eight estimate plans have been prepared and furnished the Assessment Division of the Street Laying-out Department.

A complete list, giving all plans made during the year, will be found in the Appendix.

The Boston city base is in such common use that something of its history may be of interest at this time.

The earliest reference to benches which we have is found in Survey Book No. 1, dated 1851, which places the base of "city water levels" 84.729 feet below the coping of the dry dock, mean low water 14.7 feet below the coping, and marsh level 5.089 feet below the coping.

Level Book 22 contains levels to establish bench marks in the City of Boston, commenced May 18, 1854. The starting point being the coping of the "dry dock in the Charlestown Navy Yard at elevation 15.000, on the west end of the dock right side of centre on curved stone on which is an inscription." These benches established in 1854 have been in use ever since at the same elevations. This base was designated as mean low water on plans made by the city up to 1878.

Level Book 31 (1855) has a list of two sets of benches, one made from the old base and one from the new base.

There is nothing there shown to give the relation of the two bases, the points not being identical. In Book 22 we find levels taken on the old benches, making them from 0.06 to 0.13 lower than the heights given in the old list.

In 1878 the benches in the City Proper were compared. They were found to be in substantial agreement. The dry dock bench at entrance was also compared with city base, and was found to be grade 15.33 city base. A second bench on the dry dock, on the westerly side over arrow cut, in the face of wall, was found to be grade 15.14. The north-west end of the dry dock was made grade 15.13. United States Coast Survey Report, 1870, page 93, gives the height of the dry dock bench above mean low water as 14.69 and 4.89 above mean high water. These figures make the mean rise and fall of tides as 9.80. Boston city base thus appears to be 0.64 below mean low water (15.33 minus 14.69 equals 0.64) and 5.54 below mean sea level (4.90 plus 0.64 equals 5.54). The result of these levels was to change the designation of the Boston datum plane from mean low water to city base.

The effect of establishing benches upon buildings erected on made land is shown by a series of tests upon a bench established upon the Museum of Fine Arts.

In 1886 the bench at the Museum of Fine Arts was established from the original line of benches on Pleasant street at grade 20.297. This bench is on made land in the Back Bay district, the building resting on piles.

About 1895 a careful line of levels was run from the old benches, for the State Metropolitan Water Board, touching on the bench at the Museum of Fine Arts, which made it grade 20.215, an apparent settlement of 0.082 in nine years (.009 per year).

In June, 1893, a line of levels was started by the State Topographical Survey from this bench taking it to be 20.297 above city base or 14.737 above mean sea level, obtained by subtracting 5.56 from city base.

As something, which may have a bearing on this subject, it may be stated that it is understood that the Harbor and Land Commissioners use a mean low water, which is 0.38 above city base.

In connection with the Surveying Division there have been 2,762 titles examined, 1,550 deeds and 458 plans copied from the Registry of Deeds.

The following list gives the number of orders attended to for property owners, builders, and the various city departments, from February 1, 1899, to February 1, 1900:

ENGINEERING DEPARTMENT.

37

Street lines given	566
Street grades given	390
Street Department, Paving Division	2,008
Street Department, Sewer Division	675
Street Department, Street Watering Division	3
Buildings Department	103
Public Buildings Department	53
Public Grounds Department	5
Law Department	92
Street Commissioners	229
Engineering Department	285
Engineering Department, Architectural Division	3
Park Department	33
Water Department	4
Board of Health	3
City Hospital Department	2
Police Department	1
Fire Department	4
Cemetery Department	6
School Committee	1
Mayor and City Council	2
Total	4,468

Twenty-four hundred and ninety-six blue prints have been made during the year.

List of plans for sewerage works made during the year ending January 31, 1900 :

PLANS FOR BROOK TAKINGS.

Dorchester.

	Length in feet
Avondale place, from Richmond street to Dorchester avenue	1,620
Bernard street and Southern avenue branch of Stony brook	1,100
Canterbury branch of Stony brook, from Lauriat avenue to Callender street	315
Mattapan brook, from Blue Hill avenue and River street to Neponset river	88
<i>Carried forward</i>	3,123

West Roxbury.

	Length in feet.
<i>Brought forward</i>	3,123
Pleasant street, near Dent street	534
Stony brook, from Boylston station to Sturtevant Blower Works	1,260

Brighton.

Corey road, from Corey road to Brookline line	140
Harvard avenue, from Harvard avenue across Com- monwealth avenue to Harvard avenue	350
Faneuil Valley brook, from Oak square avenue to Oakland street	646
Total	<u>6,053</u>

PLANS FOR SEWER TAKINGS.

Dorchester.

Bernard street, from Lauriat avenue to Talbot avenue,	1,565
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Roxbury.

Ellingwood street, from Fisher avenue to Ellingwood street	170
Prentiss place, from Prentiss place to Lamont street	160

West Roxbury.

Parley Vale Outlet, from Parley Vale street to St. John street	236
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East Boston.

Condor street, from Condor street to low water	400
East Boston low level sewer, from Metropolitan pump- ing-station and Belle Isle Inlet at Revere line	7,200
Total	<u>9,731</u>

The following table gives the monthly amounts of paving work measured by the Surveying Division of the Engineering Department for the year ending January 31, 1900 :

	Feet of Edge-stone Set.	Square Yards Block-stone Paving and Crossings.	Square Yards Round-stone Paving.	Square Yards Brick Paving.	Square Yards Artificial Stone.	Square Yards Coal Tar Concrete.	Square Yards Asphalt Paving.
February	None	None	None	None	None	None	None
March	None	None	None	None	None	None	None
April	5,923	8,566	993	2,651	281	
May	13,340	6,715	2,801	8,202	426	
June.....	11,660	6,144	2,699	4,206	1,726	754	
July	4,386	5,334	457	2,039	1,453	
August	9,078	7,302	1,250	4,813	3,923	16
September.....	13,883	7,978	1,643	10,376	1,095	
October.....	10,918	7,562	3,015	6,689	1,578	35	
November	12,918	9,634	3,664	8,228	2,544	
December.....	4,177	1,544	649	1,742	1,195	
January, 1900.....	71	24	152	
Total.....	86,354	60,803	17,323	48,946	14,221	789	16

The following table gives the amounts of paving work measured by the Surveying Division of the Engineering Department for the year ending January 31, 1900, by districts :

	Feet of Edge-stone Set.	Square Yards Block-stone Paving and Crossings.	Square Yards Round-stone Paving.	Square Yards Brick Paving.	Square Yards Artificial Stone.	Square Yards Coal Tar Concrete.	Square Yards Asphalt Paving.
Charlestown	161	
Boston Proper	9,007	6,552	538	4,995	4,225	16
East Boston.....	7,249	1,809	2,703	8,164	
South Boston.....	3,882	4,258	78	3,660	120	
Dorchester	11,895	8,814	1,495	4,170	4,767	754	
Roxbury.....	49,978	25,974	8,192	25,560	3,058	
West Roxbury... ..	2,727	913	3,484	1,204	922	32	
Brighton	1,616	12,483	833	1,193	968	3	
Total.....	86,354	60,803	17,323	48,946	14,221	789	16

The following table gives the comparative annual amounts of paving work measured by the Surveying Division of the Engineering Department, for six years :

YEAR ENDING JANUARY 31.	Feet of Edge- stone Set.	Square Yards Block-stone Paving and Crossings.	Square Yards Round-stone Paving.	Square Yards Brick Pav- ing.	Square Yards Artificial Stone.	Square Yards Coal Tar Concrete.	Square Yards Asphalt Pav- ing.
1895.....	23,487	12,007	5,175	6,168	3,962	11,738	1,406
1896.....	129,383	60,472	32,940	68,701	12,296	183	1,297
1897.....	120,158	64,952	24,976	68,178	13,471	2,971	394
1898.....	154,718	100,414	36,658	94,003	13,599	4,019	27
1899.....	76,991	56,541	14,249	43,930	11,652	1,619	
1900.....	86,354	60,803	17,323	48,946	14,221	789	16

As a matter of record, the following list is given of the work done for the Paving Division of the Street Department, from February 1, 1899, to February 1, 1900:

BOSTON PROPER.

(North of Massachusetts avenue.)

Albany street, opposite East Canton street. Grade for edgestone.

Albemarle street, south-westerly side, next to railroad. Line and grade for edgestone.

Albemarle street, Nos. 17-19 and at Albemarle Chambers. Line and grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of edgestone, gutter and sidewalk paving.

Atlantic avenue, southerly side, near Oliver street. Grade for edgestone.

Atlantic avenue, westerly corner Summer street. Grade of edgestone tested, grade for inside, and measurement of sidewalk paving.

Atlantic avenue, northerly corner Essex street. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.

Atlantic avenue, north-westerly side, Essex to East street. Grade of edgestone tested and grade for inside.

Barrett street, No. 14. Measurement of sidewalk paving.

Beach street, opposite Knapp street. Levels on edgestone, sidewalk, etc.

Beacon street, at Hotel Bellevue. Grade of edgestone tested, grade for inside, and measurement of sidewalk paving.

Beacon street, Arlington street to No. 133. Measurement of edgestone, gutter and sidewalk paving.

Beacon street, No. 422. Grade of edgestone tested, grade for inside, and measurement of sidewalk paving.

- Beacon street*, westerly corner Hereford-street extension. Grade of edgestone tested, grade for edgestone, grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Beacon street*, Nos. 456-458. Measurement of sidewalk paving.
- Beacon street*, Nos. 479-481. Grade of edgestone tested twice, grade for edgestone, grade for inside, and measurement of edgestone, gutter and sidewalk paving.
- Beacon street*, easterly corner Massachusetts avenue. Grade of edgestone tested twice, grade for edgestone, grade for inside, and measurement of edgestone, gutter and sidewalk paving.
- Bedford street*, easterly corner Washington street. Levels on edgestone.
- Belvidere street*, westerly corner Dalton street. Grade for edgestone.
- Belvidere street*, northerly side, Dalton street to Bothnia street. Measurement of edgestone, gutter and sidewalk paving.
- Beverly street*, No. 78. Grade of edgestone tested, line and grade for edgestone, line and grade for edgestone tested, grade for inside, and measurement of sidewalk paving.
- Blackwood street*, Nos. 13-15. Grade for edgestone, grade of edgestone tested, and measurement of edgestone, gutter and sidewalk paving.
- Boylston street*, No. 160. Plan and profile for proposed grade, grade of edgestone tested, and measurement of sidewalk paving.
- Boylston street*, Arlington street to Berkeley street. Measurement of gutter paving.
- Broad street*, Central street to Milk street. Plan and profile for proposed grade.
- Broad street*, No. 36. Line and grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Buckingham street*, northerly corner Columbus avenue. Grade for bulkhead.
- Cambridge street*, No. 8. Grade for bulkhead.
- Cambridge street*, No. 25. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Cambridge street*, No. 158. Levels to test edgestone, and bulkhead.
- Canal street*, southerly corner Causeway street. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Canal street*, westerly corner Market street. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Castle street*, corner Washington street. Measurements and levels to test edgestone, etc.
- Causeway street*, Beverly street to Medford street. Plan showing edgestone, tracks, etc., and measurement of edgestone, roadway, and sidewalk paving.
- Charlestown street*, No. 132. Grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Chauncy street*, easterly corner Essex street. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Clinton street*, northerly side Merchants row to Blackstone street. Plan and profile for proposed grade.
- Clinton street*, No. 12. Grade for area in sidewalk.

- Clinton street*, northerly corner Commercial street. Line and grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Columbus avenue*, easterly side, Chandler street to Clarendon street. Measurement of sidewalk paving.
- Columbus avenue*, northerly corner Wellington street. Grade of edgestone tested twice, grade for edgestone, grade for inside, and measurement of edgestone and sidewalk paving.
- Commercial street*, Prince street to Hull street. Plan showing edgestone, tracks, etc., measurement of edgestone, roadway, and sidewalk paving.
- Court square*, south-westerly corner Court street. Grade of edgestone tested and grade for inside.
- Court street*, south-westerly corner Court square. Grade of edgestone tested, and grade for inside.
- Dalton street*, westerly corner Belvidere street. Grade for edgestone, and measurement of edgestone, gutter, driveway, and sidewalk paving.
- Dartmouth street*, Columbus avenue to Warren avenue. Line and grade for edgestone, and measurement of edgestone, roadway, and sidewalk paving.
- Dundee street*, No. 27. Line and grade of edgestone tested and grade for inside.
- Dundee street*, No. 47. Line and grade of edgestone tested and measurement of sidewalk paving.
- East street*, northerly corner Atlantic avenue. Line and grade for edgestone, line and grade of edgestone tested, and grade for inside.
- Eliot street*, south-westerly corner Tremont street. Grade for sidewalk tested for coal hole.
- Essex street*, easterly corner Chauncy street. Grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Essex street*, westerly corner South street. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Essex street*, westerly corner Atlantic avenue. Grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Essex street*, westerly corner Atlantic avenue. Grade of edgestone tested and grade for inside.
- Exchange street*, easterly side. Plan and profile for proposed grade.
- Exchange street*, easterly side, near Dock square. Grade for area in sidewalk.
- Exeter street*, easterly corner Marlboro' street. Measurement of edgestone, gutter, and sidewalk paving.
- Fairfield street*, westerly corner Commonwealth avenue. Grade of edgestone tested twice, grade for edgestone, revised grade for edgestone, grade for inside, and measurement of sidewalk paving.
- Friend street*, Sudbury street to Washington street. Plan and profile for proposed grade.
- Friend street*, north-easterly side, Sudbury street to Washington street. Grade for edgestone.
- Fulton street*, opposite John street. Line and grade for edgestone, grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Hammond avenue*. Grade for sidewalk.

- Harcourt street*, north-easterly side. Measurement of edgestone, gutter, driveway, and sidewalk paving.
- Harris street*, measurement of roadway paving.
- Hereford street*, south-westerly corner Commonwealth avenue. Line and grade of edgestone tested, grade for edgestone, grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- High-street place*, south-westerly corner Matthew street. Grade for bulkhead.
- Hollis street*, south-easterly corner Tremont street. Grade of edgestone tested twice, revised grade for edgestone, grade for inside, and measurement of sidewalk paving.
- India street*, Nos. 72-74. Line and grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- John street*, Nos. 13 to 27. Grade for edgestone, grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Joy street*, from Myrtle street north. Plan and profile for proposed grade.
- Kneeland street*, Nos. 16-18. Grade of edgestone tested twice, grade for edgestone, grade for inside, and measurement of sidewalk paving.
- Lancaster street*, No. 34. Grade of edgestone tested and grade for inside.
- Marlboro' street*, No. 409. Grade of edgestone tested twice, grade for edgestone, grade for inside, and measurement of sidewalk paving.
- Mason street*, rear of Adams House. Grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Massachusetts avenue*, easterly corner Beacon street. Grade of edgestone tested, grade for inside, and measurement of edgestone, roadway and sidewalk paving.
- Medford street*, north-easterly side. Line and grade for edgestone and line and grade of edgestone tested.
- Merrimac street*, Nos. 114 to 126. Grade of edgestone tested, grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Motte street*, southerly corner Washington street. Grade for bulkhead.
- Myrtle street*, Joy street to South Russell street. Plan and profile for proposed grade.
- Newbury street*, north-easterly side, near Hereford street. Grade for edgestone.
- North street*, No. 26. Measurement of sidewalk paving.
- Ohio street*, near northerly corner Washington street. Grade of edgestone tested.
- Oliver street*, south-west side, near Milk street. Grade for sidewalk.
- Public Alley*, No. 414, north-east corner Massachusetts avenue. Grade of edgestone and sidewalk tested and measurement of sidewalk paving.
- Public Alley*, No. 430, north-west corner Hereford street. Grade of edgestone tested and grade for edgestone.
- St. Germain street*, Nos. 37 and 39. Grade of edgestone tested, grade for edgestone, grade of edgestone tested, and grade for inside, and measurement of sidewalk paving.

- School street*, No. 40. Grade for edgestone, grade of edgestone tested and measurement of sidewalk paving.
- Scotia street*, Nos. 15-16. Line and grade for edgestone.
- Snowhill street*, easterly corner Prince street. Plan and profile for proposed grade, grade for edgestone, grade of edgestone tested and grade for bulkhead.
- South street*, north-westerly side, Essex to Tufts street. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- South Cedar place*, measurement of edgestone, roadway and sidewalk paving.
- Summer street*, No. 73. Grade of edgestone and sidewalk tested and measurement of sidewalk paving.
- Summer street*, No. 175. Line and grade for edgestone, line and grade of edgestone tested, and measurement of sidewalk paving.
- Summer street*, westerley corner Atlantic avenue. Grade of edgestone tested and measurement of sidewalk paving.
- Tremont street*, at No. 175. Plan and profile for proposed grade.
- Tremont street*, at No. 176. Grade of edgestone tested twice, grade for inside, and measurement of sidewalk paving.
- Tremont street*, south-easterly corner Hollis street. Grade of edgestone tested twice, grade for inside, and measurement of sidewalk paving.
- Tufts street*, northerly corner South street. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Tyler street*, northerly corner Curve street. Grade for bulkhead.
- Village street*, Compton street to Dover street. Plan and profile for proposed grade.
- Village street*, No. 80. Grade for bulkhead.
- Walnut street*. Plan and profile for proposed grade.
- Walnut street*, Nos. 4-6. Grade for edgestone, grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Washington street*, No. 324. Grade for sidewalk tested.
- Washington street*, north-westerly side, Winter street to Bromfield street. Plan and profile for proposed grade.
- Washington street*, easterly corner Bedford street. Levels on sidewalk to test grade.
- Washington street*, No. 625. Levels to test sidewalk.
- Water street*, Congress street to Kilby street. Plan and profile for proposed grade.
- Water street*, No. 85. Grade for edgestone, grade of edgestone tested, and measurement of sidewalk paving.
- Wellington street*, northerley corner Columbus avenue. Grade of edgestone tested, grade for edgestone, and measurement of edgestone, gutter, and sidewalk paving.
- West street*, westerly corner Washington street. Grade of edgestone tested, grade for edgestone, and measurement of sidewalk paving.
- West Newton street*, Washington street to Shawmut avenue. Plan and profile for proposed grade.
- West Newton street*, Huntington avenue to railroad. Measurement of gutter and crosswalk paving.
- Winchester street*, Pleasant street to Church street. Plan and profile for proposed grade.
- Winchester street*, Pleasant street to Ferdinand street. Grade for edgestone and measurement of edgestone, roadway and sidewalk paving.

SOUTH BOSTON.

- Congress street*, at New England Railroad. Limit of repaving fixed.
Congress street, at New England Railroad. Paving measured.
East Fifth street, northerly side, H street to G street. Line and grade for setting edgestone.
East Ninth street, Nos. 255-263. Line and grade for artificial stone sidewalk and steel-bound edgestone, and edgestone tested for line and grade and artificial stone sidewalk measurement.
East Second street, No. 728. Line and grade for setting edgestone.
East Seventh street, No. 657. Edgestone tested for line and grade.
East Sixth Street, Nos. 422-424. Line and grade for setting edgestone.
East Third street, Nos. 472-476. Estimate furnished for amount of edgestone required, and line and grade for setting edgestone.
East Third street, No. 477. Line and grade for setting edgestone.
East Third street, No. 571. Estimate furnished for amount of edgestone required.
East Third street, No. 740. Line and grade for setting edgestones.
Mercer street, Nos. 73-75. Line and grade for setting edgestone.
Mercer street, Nos. 81-83. Line and grade for setting edgestone.
Middle street, Nos. 66-68. Line and grade for setting edgestone.
Peters street, Nos. 9-11. Line and grade for setting edgestone.
Story street, Nos. 2-4. Line and grade for setting edgestone.
Story street, Nos. 6-8. Line and grade for setting edgestone.
Vale street, Nos. 6-8. Line and grade for setting edgestone and edgestone tested for line and grade, and measurement of edgestone and sidewalk paving.
Vale street, Nos. 9-11. Curb tested for line and grade for artificial stone sidewalk and measurement of edgestone and sidewalk paving.
W. Broadway, No. 322. Edgestone tested for line and grade for artificial stone sidewalk.
W. Seventh street, E street to Dorchester street. Line and grade for resetting edgestone and measurement of edgestone, gutter, crossing, and sidewalk paving.
W. Third street, B street to D street. Measurements and levels on edgestone, line and grade for setting edgestone, and measurement of edgestone, gutter, crossing, and sidewalk paving.

EAST BOSTON.

- Bennington street*, No. 432. Measurement of crossings.
Blackinton street, westerly side, at Leyden street. Measurement of sidewalk paving.
Bremen street, at Prescott street. Measurement of gutter.
Bremen street, No. 294. Line and grade for setting edgestone.
Bremen street, Nos. 310-312. Line and grade for setting edgestone, and measurement of edgestone, gutter and sidewalk paving.
Bremen street, No. 418. Line and grade for setting edgestone.
Brooks street, at Morris street. Measurement of gutter and crossing paving.
Brooks street, between Paris street and Morris street. Measurement of gutter paving.

- Brooks street*, at Paris street. Measurement of gutter and crossing paving.
- Condor street*, south-easterly corner Meridian street. Line and grade for setting edgestone and measurement of edgestone, gutter and sidewalk paving.
- Everett street*, northerly side, between Cottage street and Lamson street. Measurement of sidewalk paving.
- Marion street*, Nos. 249-251-253. Line and grade for setting edgestone.
- Maverick street*, between Cottage street and Orleans street. Line and grade for setting edgestone.
- Maverick street*, Nos. 90-92. Line and grade for setting edgestone and measurement of edgestone, gutter, and sidewalk paving.
- Maverick street*, Nos. 210 to 212. Line and grade for setting edgestone and measurement of edgestone, gutter and sidewalk paving.
- Morris street*, northerly side, between Brooks street and Putnam street. Line and grade for setting edgestone.
- Morris street*, No. 15. Line and grade for setting edgestone.
- Morris street*, No. 50. Line and grade for setting edgestone.
- Morris street*, No. 71. Line and grade for setting edgestone and measurement of edgestone, gutter and sidewalk paving.
- Paris street*, northerly side, at Brooks street. Measurement of gutter and crossing paving.
- Paris street*, No. 136. Measurement of gutter paving.
- Paris street*, No. 166. Line and grade for setting edgestone and measurement of edgestone, gutter and sidewalk paving.
- Prescott street*, between Saratoga street and Trenton street. Measurement of edgestone, gutter, crossing, and sidewalk paving.
- Princeton street*, between Meridian street and Prescott street. Measurements and levels on edgestone, line and grade for setting edgestone, and measurements of edgestone, gutter, driveway, crossing, and sidewalk paving.
- Shelby street*, Nos. 4-8-10. Line and grade for setting edgestone and measurement of edgestone, gutter, and sidewalk paving.
- Shelby street*, Nos. 12-14-16-18. Line and grade for setting edgestone and measurement of edgestone, gutter, and sidewalk paving.
- W. Eagle street*, No. 88. Line and grade for setting edgestone and measurement of edgestone, gutter and sidewalk paving.
- White street*, northerly side, between Brooks street and Putnam street. Measurement of edgestone, gutter and sidewalk paving.

CHARLESTOWN.

- Chelsea street*, northerly side, corner Prospect street. Grade of edgestone tested, line and grade for setting edgestone, line and grade of edgestone tested, and measurement of sidewalk paving.
- Prospect street*, easterly side, corner Chelsea street. Grade of edgestone tested, line and grade for resetting edgestone, line and grade of edgestone tested, and measurement of sidewalk paving.

ROXBURY.

(South of Massachusetts avenue.)

- Abbotsford street*, grade of edgestone tested twice, grade for edgestone, grade for inside, and measurement of sidewalk paving.

- Abbotsford street*, No. 14. Line and grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Atherton street*, westerly corner Amory street. Measurement of gutter paving.
- Bartlett street*, measurement of edgestone, gutter and sidewalk paving.
- Batchelder street*, westerly corner Marshfield street. Measurement of edgestone, gutter and sidewalk paving.
- Batchelder street*, easterly corner Burrell street. Measurement of edgestone and gutter paving.
- Bay State road*, Nos. 43 to 49. Measurement of gutter paving.
- Bay State road*, No. 71. Grade of edgestone tested and line and grade for edgestone.
- Bay State road*, 119. Grade of edgestone tested twice, grade for edgestone, grade for inside, and measurement of sidewalk paving.
- Beacon street*, Nos. 510, 514, 516. Measurement for assessments.
- Beacon street*, south-easterly side, near Brookline avenue. Grade of edgestone tested twice, line and grade for edgestone, grade for inside, and measurement of edgestone, gutter and sidewalk paving.
- Beacon street*, Nos. 817, 819. Measurement of edgestone and gutter paving.
- Beacon street*, easterly corner St. Mary's street. Line and grade for edgestone, line and grade for edgestone tested, grade for inside and measurement of edgestone, gutter and sidewalk paving.
- Beech Glen street*, at Highland street. Measurement of edgestone, gutter and sidewalk paving.
- Bickford street*, Nos. 10 to 16. Measurement of sidewalk paving.
- Blanchard street*, measurement of edgestone, gutter, driveway and sidewalk paving.
- Blue Hill avenue*, westerly side, near Dudley street. Grade for bulkhead.
- Blue Hill avenue*, easterly corner Huckins street. Grade of edgestone tested.
- Blue Hill avenue*, Nos. 318, 320. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Blue Hill avenue*, southerly corner Brunswick street. Line and grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Blue Hill avenue*, northerly corner Warren street. Line and grade for edgestone and measurement of edgestone, gutter and roadway paving.
- Boylston street*, Boylston road to Brookline avenue. Line and grade for edgestone and measurement of edgestone, gutter and crosswalk paving.
- Brook avenue*, measurement of edgestone, gutter, driveway and sidewalk paving.
- Brookline avenue*, north-westerly side, near Beacon street. Line and grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of edgestone, gutter and sidewalk paving.
- Burke street*, measurement of edgestone, gutter, crosswalk and sidewalk paving.
- Burrell street*, westerly corner Norfolk avenue. Measurement of edgestone and gutter paving.

- Burrell street*, Nos. 79, 83, 90. Measurement of edgestone and gutter paving.
- Burrell street*, easterly corner Batchelder street. Measurement of edgestone and gutter paving.
- Calumet street*, Tremont street to Pequot street, westerly side. Measurement of gutter paving.
- Calumet street*, Nos. 4 to 34. Measurement of gutter paving.
- Calumet street*, No. 51. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Calumet street*, No. 80. Line and grade for edgestone and measurement of edgestone, gutter and sidewalk paving.
- Calumet street*, No. 102. Measurement of crosswalk paving.
- Carmel street*, southerly corner Tremont street. Measurement of edgestone and gutter paving.
- Cedar street*, north-easterly side, Thornton street to Washington street. Measurement of edgestone and gutter paving.
- Cedar street*, north-easterly side, Highland street to Lambert avenue. Measurement of edgestone, gutter and sidewalk paving.
- Centre street*, No. 119. Line and grade of edgestone tested, grade for inside, and measurement of gutter and sidewalk paving.
- Centre street*, southerly corner Lamartine street. Measurement of sidewalk paving.
- Centre street*, Nos. 337-339. Measurement of sidewalk paving.
- Centre street*, No. 354. Measurement of edgestone, gutter and sidewalk paving.
- Centre street*, easterly corner Forbes street. Measurement of edgestone and gutter paving.
- Cheney street*, easterly corner Hartwell street. Line and grade of edgestone tested, grade for inside, and measurement of edgestone, gutter and sidewalk paving.
- Cheney street*, north-easterly side, Montana street to Elm Hill avenue. Measurement of edgestone and gutter paving.
- Cobden street*, No. 27. Line and grade for edgestone.
- Columbus avenue*, easterly corner Coventry street. Measurement of sidewalk paving.
- Columbus avenue*, south-easterly side, from Riverside street. Grade of edgestone tested.
- Columbus avenue*, south-easterly corner Ruggles street. Grade of edgestone tested, grade for edgestone twice and measurement of edgestone and sidewalk paving.
- Columbus avenue*, northerly corner West Walnut park. Line and grade of edgestone tested twice, grade for edgestone, grade for inside, and measurement of edgestone, gutter and sidewalk paving.
- Copeland street*, Louise park to Warren street. Profile for revised grade.
- Copeland street*, Nos. 26 to 34. Line and grade for edgestone, revised grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of edgestone, gutter and sidewalk paving.
- Crawford street*, south-westerly side, Elm Hill avenue to Warren street. Measurement of edgestone, gutter, driveway and sidewalk paving.
- Crawford street*, both sides of Humboldt avenue. Measurement of edgestone, gutter and sidewalk paving.
- Crawford street*, Nos. 96 to 100. Measurement of edgestone, gutter and sidewalk paving.

- Creighton street*, Nos. 47 to 59. Measurement of driveway and sidewalk paving.
- Day street*, north-easterly corner Roud Hill street. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Dennis street*, Nos. 15 to 25. Measurement of sidewalk paving.
- Dennis street*, westerly corner Moreland street. Line and grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of edgestone, gutter and sidewalk paving.
- Dorr street*, measurement of edgestone, gutter, driveway and sidewalk paving.
- Dudley street*, Adams street to Mt. Pleasant avenue. Measurement of edgestone, roadway, driveway and sidewalk paving.
- Edgewood street*, Nos. 3 to 9. Grade of edgestone tested, line and grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of driveway and sidewalk paving.
- Eliot square*, southerly side, Bartlett street to Highland street. Measurement of edgestone, gutter and sidewalk paving.
- Elm Hill avenue*, westerly corner Howland street. Measurement for assessment.
- Elm Hill avenue*, south-easterly side, Crawford street to Georgia street. Measurement of edgestone, gutter, driveway and sidewalk paving.
- Elm Hill avenue*, Nos. 89-95. Measurement of edgestone, gutter and sidewalk paving.
- Fisher avenue*, No. 28 to Parker street. Measurement of gutter paving.
- Fisher avenue*, Nos. 12-16. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Fisher avenue*, Nos. 30-50. Measurement of gutter paving.
- Fisher avenue*, No. 78. Measurement of edgestone, gutter and sidewalk paving.
- Forbes street*, No. 18 to Centre street. Measurement of gutter and crosswalk paving.
- Fort avenue*. Measurement of edgestone, gutter, driveways, and sidewalk paving.
- George street*, No. 91. Line and grade for edgestone.
- Georgia street*, north-easterly side, Elm Hill avenue to Hartwell street. Measurement of edgestone, gutter, driveway, and sidewalk paving.
- Georgia street*, south-westerly side, Elm Hill avenue to Montana street. Measurement of edgestone, gutter and crosswalk paving.
- Guild row*. Measurement of edgestone, roadway and sidewalk paving.
- Guild street*, south-westerly side, Thornton street to Washington street. Measurement of edgestone, gutter and sidewalk paving.
- Harrishof street*, Humboldt avenue to Harold street. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Haskins street*, north-westerly side. Measurement of edgestone, gutter, driveway, and sidewalk paving.
- Hartwell street*, easterly corner Cheney street. Line and grade for edgestone, line and grade of edgestone tested, and measurement of edgestone, gutter and sidewalk paving.
- Hartwell street*, Nos. 30-32. Line and grade for edgestone, line and grade of edgestone tested, grade for inside and measurement of sidewalk paving.

- Hartwell street*, Cheney street to Schuyler street. Measurement of edgestone and gutter paving.
- Heath street*, Nos. 357-367. Line and grade for edgestone, line and grade of edgestone tested, grade for inside and measurement of edgestone, gutter and sidewalk paving.
- Heath street*, Nos. 331-353. Line and grade for edgestone and measurement of edgestone, gutter and sidewalk paving.
- Heath place*, Nos. 3-5. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Highland avenue*, easterly side. Measurement of edgestone, gutter and sidewalk paving.
- Highland street*, Eliot square to Norfolk street. Measurement of edgestone, gutter and sidewalk paving.
- Highland street*, north-westerly side, Morley street to Lewis park. Measurement of edgestone, gutter and sidewalk paving.
- Highland street*, south-easterly side, Cedar street to Dorr street. Measurement of edgestone, gutter, driveway, and sidewalk paving.
- Highland street*, No. 198 to Hawthorn street. Measurement of edgestone, gutter and sidewalk paving.
- Highland street*, Nos. 235-219. Measurement of edgestone, gutter and sidewalk paving.
- Highland Park avenue*. Measurement of edgestone, gutter, driveway and sidewalk paving.
- Highland Park street*, north-west side. Measurement of edgestone, gutter and sidewalk paving.
- Hillside street*, at Calumet street. Measurement of crosswalk paving.
- Hillside street*, No. 180. Line and grade for edgestone, measurement of edgestone, gutter and sidewalk paving.
- Hollander street*, Nos. 15-31. Line and grade for edgestone, line and grade of edgestone tested; line and grade for edgestone, line and grade of edgestone tested, grade for inside, measurement of edgestone, gutter and sidewalk paving.
- Homestead street*, Nos. 19-25. Line and grade for edgestone, measurement of edgestone, gutter paving.
- Howland street*, No. 29. Grade of edgestone tested, grade for edgestone.
- Howland street*, Nos. 29-31. Measurement of edgestone, gutter, and sidewalk paving.
- Howland street*, east corner Humboldt avenue. Line and grade for edgestone, measurement of edgestone, gutter and sidewalk paving.
- Huckins street*, east corner Blue Hill avenue. Line and grade for edgestone, line and grade of edgestone tested (twice), grade for inside, measurement of edgestone, gutter and sidewalk paving.
- Huckins street*, No. 15 to Blue Hill avenue. Measurement of edgestone, gutter and sidewalk paving.
- Huckins street*, Nos. 17. Line and grade for edgestone, measurement of edgestone and gutter.
- Huckins street*, Nos. 19-29. Line and grade for edgestone, line and grade for edgestone tested, grade for inside, measurement of edgestone, gutter and sidewalk paving.
- Humboldt avenue*, north corner Crawford street. Measurement of edgestone, gutter and sidewalk paving.
- Humboldt avenue*, Crawford street to Ruthven street. Measurement of edgestone, gutter and sidewalk paving.

- Humboldt avenue*, No. 201. Line and grade for edgestone, line and grade of edgestone tested, measurement of sidewalk paving.
- Humboldt avenue*, north corner Ruthven street. Line and grade for edgestone, measurement of edgestone, gutter and sidewalk paving.
- Humboldt avenue*, north corner Seaver street. Grade for edgestone.
- Humboldt avenue*, at Seaver street. Plan and profile for revised grade.
- Humboldt avenue*, north-west corner Seaver street. Revised grade for edgestone, grade of edgestone tested, grade for inside, measurement of edgestone, gutter and paving.
- Hunneman street*, east corner Washington street. Line and grade for sidewalk.
- Hunneman street*, near west corner Fellows street. Line and grade for edgestone, grade for inside, measurement of gutter, crosswalk, and sidewalk paving.
- Huntington avenue*, Nos. 252-254. Line and grade of edgestone tested, grade for edgestone, grade of edgestone tested, and grade for inside, measurement of edgestone, and sidewalk paving.
- Ipswich street*, north corner Boylston street. Grade for bulkhead.
- Juniper street*. Measurement of edgestone, gutter, crosswalk, driveway, and sidewalk paving.
- Kendall street*, at Tremont street. Measurement of edgestone, gutter and sidewalk paving.
- King street*, Nos. 18-24. Line and grade of edgestone tested, line and grade for edgestone, line and grade of edgestone tested and grade for inside, measurement of edgestone, gutter, driveway, and sidewalk paving.
- Kingsbury street*, south corner Washington street. Measurement of sidewalk paving.
- Lamartine street*, south corner Centre street. Measurement of crosswalk and sidewalk paving.
- Lambert avenue*, Cedar street to Dudley street. Measurement of edgestone, gutter, driveway, and sidewalk paving.
- Laurel street*, Nos. 19-27. Measurement of edgestone, gutter, driveway, and sidewalk paving.
- Lawn street*, easterly end. Measurement of gutter paving.
- Lawn street*, westerly side of street, easterly corner Heath street. Line and grade for edgestone.
- Lenox street*, at Tremont street. Measurement of roadway paving.
- Lewis park*. Measurement of edgestone, gutter and sidewalk paving.
- Linwood square*. Measurement of edgestone, gutter and sidewalk paving.
- Linwood street*. Measurement of edgestone, gutter, driveway and sidewalk paving.
- Mansur street*, westerly corner Schiller street. Measurement of edgestone and gutter paving.
- Marshfield street*, No. 32. Measurement of edgestone and gutter paving.
- Massachusetts avenue*, westerly side, near Norway street. Grade of edgestone tested, line and grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.

- Minden street*, easterly corner Heath place. Grade of edgestone tested twice, grade for edgestone, grade for inside, and measurement of edgestone, gutter and sidewalk paving.
- Montana street*, southerly and westerly corners Georgia street. Measurement of edgestone, gutter, driveway, and sidewalk paving.
- Moreland street*, south-easterly corner Warren street. Line and grade of edgestone tested twice, grade for edgestone, grade for inside and measurement of edgestone, gutter and sidewalk paving.
- Moreland street*, westerly corner Dennis street. Line and grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Munroe street*, No. 76. Line and grade for edgestone, line and grade of edgestone tested, grade for inside and measurement of edgestone, gutter, crosswalk, and sidewalk paving.
- Munroe street*, No. 99. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Newbury street*, north-easterly corner Charlesgate east. Measurement of sidewalk paving.
- Norfolk avenue*, Shirley street to Marshfield street. Line and grade for edgestone and measurement of edgestone and roadway paving.
- Norfolk avenue*, Nos. 164-166. Measurement of sidewalk paving.
- Norfolk avenue*, No. 253. Measurement of edgestone and gutter paving.
- Norfolk street*. Measurement of edgestone, gutter, driveway, and sidewalk paving.
- North avenue*. Measurement of edgestone, gutter, driveway, and sidewalk paving.
- Northampton street*, Columbus avenue to railroad. Grade for edgestone.
- Northfield street*. Plan and profile for proposed grade, grade for edgestone and measurement of edgestone, gutter, crosswalk and sidewalk paving.
- Norway street*, Nos. 102 to 108. Line and grade of edgestone tested twice, line and grade for edgestone, grade for inside and measurement of sidewalk paving.
- Ottawa street*, No. 30. Measurement of sidewalk paving.
- Parker street*, Huntington avenue to Ruggles street. Measurement of edgestone, roadway, crosswalk and sidewalk paving.
- Parker street*, at Fisher avenue. Measurement of gutter paving.
- Queensbury street*, westerly corner Audubon road. Measurement of edgestone and gutter paving.
- Rand street*, Nos. 28-30. Measurement of sidewalk paving.
- Riverside street*, northerly corner Tremont street. Line and grade of edgestone tested and grade for inside.
- Rockland street*, No. 28 to Walnut avenue. Measurement of gutter paving.
- Round Hill street*, easterly corner Day street. Line and grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Round Hill street*, Day street to Gay Head street. Grade for edgestone.
- Round Hill street*, Nos. 47 to 57, 54 and 56. Measurement of edgestone, gutter and sidewalk paving.

- Roxbury street*, Guild Row to Shawmut avenue. Measurement of edgestone roadway and sidewalk paving.
- Ruggles street*, south corner Columbus avenue. Grade of edgestone tested, grade for edgestone, grade of edgestone tested and grade for inside, measurement of edgestone, gutter and sidewalk paving.
- Ruthven street*, north corner Humboldt avenue. Line and grade for edgestone, measurement of edgestone, gutter and sidewalk paving.
- Ruthven street*, Nos. 144 and 148. Line and grade for edgestone, line and grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Ruthven street*, north-easterly side, Elm Hill avenue to Humboldt avenue. Offsets to fix line.
- Ruthven street*, No. 137. Line and grade for edgestone and measurement of edgestone, gutter and sidewalk paving.
- Ruthven street*, No. 153. Line and grade for edgestone and measurement of edgestone, gutter and sidewalk paving.
- St. Stephen street*, Gainsboro' street to No. 86. Grade for edgestone, and measurement of edgestone, gutter and sidewalk paving.
- Schiller street*, at Mansur street. Measurement of edgestone and gutter paving.
- Schiller street*, north-westerly corner Minden street. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Schuyler street*, Nos. 3 to 13. Measurement of edgestone, gutter and sidewalk paving.
- Seaver street*, at Humboldt avenue. Plan and profile of gutter, car tracks, etc., for revised grade.
- Seaver street*, northerly corner Humboldt avenue. Grade for edgestone, line and grade of edgestone tested, grade for inside and measurement of edgestone and gutter paving.
- Thornton street*, Guild street to Cedar square. Measurement of edgestone, gutter, crosswalk and sidewalk paving.
- Tremont street*, south-easterly side, Camden street to Hammond street. Measurement of edgestone, roadway and sidewalk paving.
- Tremont street*, northerly corner Riverside street. Line and grade of edgestone tested and grade for inside.
- Tremont street*, St. Alphonsus street to Burney street. Plan showing location of poles, curb, etc.
- Tremont street*, southerly corner Carmel street. Line and grade of edgestone tested twice, line and grade for edgestone, grade for inside and measurement of edgestone, gutter and sidewalk paving.
- Tremont street*, No. 1528. Line and grade for edgestone, line and grade of edgestone tested and measurement of edgestone, gutter and sidewalk paving.
- Tremont street*, opposite Mission Church. Measurement of edgestone, gutter, crosswalk and sidewalk paving.
- Tremont street*, No. 1562. Line and grade for edgestone and measurement of edgestone, gutter and sidewalk paving.
- Valentine street*, easterly corner Fulda street. Proposed change in grade marked.

- Vancouver street*, north-westerly side. Grade of edgestone tested, grade for edgestone and measurement of edgestone, driveway, gutter and sidewalk paving.
- Victor street*, westerly side. Measurement of edgestone, gutter and sidewalk paving.
- Vine street*, southerly corner Dudley street. Measurement of edgestone, gutter and sidewalk paving.
- Wabeno street*, westerly corner Wyoming street. Line and grade for edgestone, line and grade of edgestone tested, grade for inside and measurement of edgestone, gutter, and sidewalk paving.
- Wabeno street*, Nos. 11 to 17. Line and grade for edgestone and measurement of edgestone, gutter and sidewalk paving.
- Wait street*, Huntington avenue to Pequot street. Measurement of gutter and sidewalk paving.
- Walnut avenue*, Nos. 80 to 94. Measurement of gutter and crosswalk paving.
- Warren place*. Measurement of edgestone, gutter and sidewalk paving.
- Warren street*, south-westerly corner Moreland street. Grade of edgestone tested, line and grade for edgestone, line and grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Warren street*, Moreland street to Winthrop street. Measurement of edgestone, roadway and sidewalk paving.
- Washington street*, Nos. 2491 to 2497. Measurement of sidewalk paving.
- Washington street*, Nos. 2450-2486. Grade of edgestone tested, line and grade for edgestone, line and grade of edgestone tested, grade for inside and measurement of edgestone, roadway and sidewalk paving.
- Washington street*, Nos. 2764-2766. Grade of edgestone tested, line and grade for edgestone, line and grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Washington street*, Nos. 2760 to 2780. Measurement of edgestone, roadway, and sidewalk paving.
- Washington street*, No. 2985. Measurement of edgestone, gutter and sidewalk paving.
- Waumbeck street*, Nos. 73-75. Line and grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of edgestone, gutter and sidewalk paving.
- Waumbeck street*, Nos. 77-79. Line and grade for edgestone, line and grade of edgestone tested, grade for inside and measurement of edgestone, gutter and sidewalk paving.
- Waumbeck street*, No. 81. Line and grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of edgestone, gutter and sidewalk paving.
- West Cottage street*, Dudley street to Judson street. Measurement of edgestone, gutter, driveway, and sidewalk paving.
- West Walnut Park*, northerly corner Columbus avenue. Measurement of edgestone, gutter and sidewalk paving.
- Whitney street*, Nos. 30-36. Measurement of gutter paving.
- Wyman street*, Nos. 25-35. Measurement of sidewalk paving.
- Wyman street*, Nos. 20, 78-80. Line and grade of edgestone tested, grade for edgestone, grade of edgestone tested, grade for inside and measurement of edgestone, gutter and sidewalk paving.

Wyoming street, opposite Wabeno street. Line and grade for edgestone, line and grade of edgestone tested twice, grade for inside, and measurement of edgestone, gutter and sidewalk paving.

DORCHESTER.

Abbot street, No. 28. Line and grade for edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of edgestone, gutter paving and artificial stone sidewalk.

Adams street, at Tenean creek. Line and grade for edgestone.

Adams street, Nos. 128-136 and 373. Line and grade for artificial steel-bound curb, line and curb, line and grade for artificial stone sidewalk, artificial stone sidewalk tested, and measurement of artificial stone sidewalk.

Algonquin street, No. 30. Line and grade for resetting edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade for artificial stone sidewalk tested and artificial stone sidewalk measured.

Allston street, Nos. 4-6-8 and corner Centre street. Line and grade for edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.

Bellevue street, No. 10. Line and grade for edgestone and measurement of edgestone and gutter paving.

Bicknell street, No. 50. Line and grade for edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.

Blue Hill avenue, Nos. 390-398. Measurement of edgestone and gutter paving.

Blue Hill avenue, near Mattapan street. Line and grade for construction.

Blue Hill avenue, from Walkhill street to, and south of, railroad. Line and grade for construction.

Bowdoin avenue, No. 101. Line and grade for edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of edgestone, gutter paving, brick and artificial stone sidewalk.

Bowdoin street, Nos. 304-308. Measurement of brick paving.

Brent street, Talbot avenue to Washington street. Line and grade for resetting edgestone and measurement of edgestone, gutter and brick paving.

Brookford street, No. 45. Line and grade for edgestone and measurement of edgestone, gutter and brick paving.

Bullard street, from Bowdoin street to Rosseter street. Measurement of coal tar concrete.

Burrell street, corner Norfolk avenue. Line and grade for edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.

Burrell street, Nos. 50-60. Line and grade for edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of edgestone, gutter paving and artificial stone sidewalk.

- Capen street*, from Norfolk street to Evans street. Line and grade for construction.
- Clarkson street*, Nos. 75-79-81. Line and grade for edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of edgestone, gutter paving and artificial stone sidewalk.
- Clarkson street*, No. 27. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Clarkson street*, No. 67. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Clarkson street*, No. 28. Measurement of coal tar concrete.
- Columbia road*, No. 572. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Columbia road*, corner Quincy street. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Columbia road*, near Dorchester avenue. Line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Crescent avenue*, at Sydney street. Measurement of brick paving.
- Crescent avenue*, Nos. 20-25. Measurement of brick pavement.
- Dewey street*, Nos. 51-57-61-63, and at Howard avenue. Line and grade for edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of edgestone, gutter paving and artificial stone sidewalk.
- Dorchester avenue*, East Cottage street to Edison Green. Line and grade for resetting edgestone and measurement of edgestone, gutter paving and brick.
- Dorchester avenue*, Nos. 865, 867. Line and grade for edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Dorchester avenue*, No. 1221. Measurement of roadway paving.
- Dorchester avenue*, Nos. 1851, 1849. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Dorchester avenue*, No. 1500. Measurement of brick paving.
- Dorchester avenue*, Bailey street to Fuller street. Line and grade for resetting edgestone and measurement of edgestone and gutter paving.
- East Cottage street*, No. 278. Line and grade for edgestone and measurement of edgestone, gutter and brick paving.
- East Cottage street*, No. 47. Measurement of brick paving.
- East Cottage street*, corner Batchelder street. Measurement of brick paving.
- East Cottage street*, at Clifton street. Measurement of brick paving.
- Edson street*, Nos. 15-17-27. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Eldon street*, Washington street to Bowdoin avenue. Measurement of edgestone, gutter and brick paving.
- Elmo street*, Blue Hill avenue to Erie street. Line and grade for edgestone, and measurement of edgestone and gutter paving.

- Fenelon street*, Nos. 8-16 and 17. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Folsom street*, Nos. 15-19. Line and grade for artificial stone-bound curb, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Geneva avenue*, at Bowdoin street. Line and grade for edgestone and measurement of edgestone, gutter and brick paving.
- Gleason street*, Harvard street to Bradshaw street. Measurement of edgestone, gutter and brick paving.
- Glendale street*, No. 64, and corner Columbia road. Line and grade for edgestone, and measurement of edgestone and gutter paving.
- Grampian way*, Howard estate. Line and grade for edgestone.
- Greenbrier street*, Nos. 24-32-42-46-50. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Hamilton street*, No. 80. Line and grade of edgestone, and measurement of edgestone and gutter paving.
- Hamilton street*, near Bellevue street extension. Line and grade for resetting edgestone.
- Hancock street*, No. 227. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Harbor View street*, corner Dorchester avenue. Line and grade for resetting edgestone, and measurement of edgestone and gutter.
- Harbor View street*, No. 14. Line and grade for resetting edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of edgestone, gutter paving and artificial stone sidewalk.
- Hartford street*, Nos. 47-49. Measurement of brick paving.
- Humphrey street*, Nos. 16-18-20-22. Measurement of brick paving.
- Kenwood street*, Nos. 66-68. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- King street*. Measurement of coal tar concrete.
- Magnolia street*, at Magnolia square. Line and grade for edgestone, line and grade for edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of edgestone, gutters, paving, and artificial stone sidewalk.
- McLellan street*, between Page street and Fowler street. Line and grade for edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of edgestone, gutter paving and artificial stone sidewalk.
- McLellan street*, and Eric street. Line and grade for edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of edgestone, gutter paving and artificial stone sidewalk.

- Michigan avenue*, Nos. 29-33. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Morse street*, No. 10. Line and grade for resetting edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of edgestone, gutter paving and artificial stone sidewalk.
- Morse street*, south-easterly side, from Washington street to Bowdoin avenue. Line and grade for resetting edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of edgestone, gutter paving and artificial stone sidewalk.
- Neponset avenue*, No. 491 to Bridge. Line and grade for edgestone, and measurement of edgestone and gutter paving.
- Neponset avenue*, No. 125. Line and grade for edgestone, and measurement of edgestone and gutter paving.
- Neponset avenue*, No. 192. Line and grade for resetting edgestone, line and grade of edgestone tested, and line and grade for artificial stone sidewalk.
- Newport street*, Nos. 10-12. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Nightingale street*, No. 26. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Norfolk street*, near Nelson street. Measurement of brick paving.
- Oakland street*, near River street. Line and grade for edgestone.
- Park street*, Nos. 514-516. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Park street*, No. 549. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone.
- Pleasant street*, between Savin Hill avenue and Freeport street. Line and grade for resetting edgestone.
- Quincy street*, Nos. 132-148. Line and grade for edgestone, and measurement of edgestone and gutter paving.
- Quincy street*, Nos. 364-366. Line and grade of edgestone tested, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Quincy street*, No. 457. Line and grade for edgestone, and measurement of edgestone and gutter paving.
- Richfield street*, No. 12. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, and measurement of artificial stone sidewalk.
- Richfield street*, No. 63 to Olney street. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade for artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Rockwell avenue*, and Milton avenue. Line and grade for edgestone, and measurement of edgestone and gutter paving.
- Rosedale street*, No. 27. Line and grade of edgestone tested, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.

- Roslin street*, No. 62. Line and grade for resetting edgestone, line and grade of edgestones tested, and line and grade for artificial stone sidewalk.
- Rosseter street*, No. 120. Measurement of edgestone and gutter paving.
- Sagamore street*, Nos. 35-37. Line and grade for edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of edgestone, gutter paving and artificial stone sidewalk.
- Sargent street*, Nos. 34-36. Measurement of brick paving.
- Savin Hill avenue*, Nos. 71-73. Measurement of brick paving.
- Savin Hill avenue*, corner Spring street. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Savin Hill avenue*, Nos. 153-159. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of edgestone, gutter paving, and artificial stone sidewalk.
- Sawyer avenue*, Nos. 56-58. Measurement of brick paving.
- School street*, south-westerly corner Washington street. Line and grade for edgestone.
- Standish street*, No. 43 to Park street. Line and grade for edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of edgestone, gutter paving, and artificial stone sidewalk.
- Stanwood street*. Nos. 34-36-38. Line and grade for edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of edgestone, gutter paving and artificial stone sidewalk.
- Stanwood street*, Nos. 151-153. Line and grade for edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested and measurement of edgestone, gutter paving and artificial stone sidewalk.
- Stanwood street*, Nos. 140-142. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Sydney street*, Nos. 103, 105, 107. Line and grade for edgestone and measurement of edgestone, gutter and brick paving.
- Talbot avenue*, Nos. 2, 4, 6, 8, 10. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Talbot avenue*, Norfolk street to Blue Hill avenue. Line and grade for construction and measurement of edgestone and gutter paving.
- Topliff street*, corner Longfellow street. Measurement of coal tar concrete.
- Trull street*, No. 23. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested and measurement of artificial stone sidewalk.
- Van Winkle street*. Carruth street to Randolph terrace. Line and grade for resetting edgestone, and edgestone and gutter paving measured.

- Victor street*, line and grade for edgestone.
- Virginia street*, Nos. 54-56. Measurement of brick paving.
- Walcott street*, Nos. 7-15 and 46. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested and measurement of artificial stone sidewalk.
- Wales street*, No. 16. Line and grade for resetting edgestone, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested and measurement of artificial stone sidewalk.
- Wales street*, No. 26. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.
- Wales street*, Nos. 25-27. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested and measurement of artificial stone sidewalk.
- Washington street* and *Erie street*. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested and measurement of artificial stone sidewalk.
- Washington street* and *Columbia road*. Measurement of crossing and brick paving.
- Washington street*, corner *Roslin street*. Line and grade for resetting edgestone and measurement of edgestone and gutter paving.
- Washington street*, *Blue Hill avenue* to *Glenarm street*. Line and grade for construction and measurement of gutter paving.
- Washington street*, at *Dakota street*. Line and grade for edgestone.
- Washington street*, Nos. 215-217. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested and measurement of artificial stone sidewalk.
- Washington street*, No. 321. Line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested and measurement of artificial stone sidewalk.
- Washington street*, Nos. 493-503. Measurement of edgestone, gutter and brick paving.
- Washington street*, Nos. 710-712. Line and grade of edgestone tested, and line and grade for artificial stone sidewalk.
- Waterlow street*, line and grade of edgestone tested, line and grade for artificial stone sidewalk, line and grade of artificial stone sidewalk tested, and measurement of artificial stone sidewalk.

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- Anawan avenue*, between *Irving street* and *Park street*. Measurement of gutter paving.
- Ashland street*, *Florence street* to *Sycamore street*. Line and grade for construction and measurement of gutter paving.
- Beech street*, at *Kenneth street*. Measurement of crosswalk and gutter paving.
- Birch street*, *Corinth street* to *Brandon street*. Line and grade for edgestone and measurement of edgestone and gutter paving.

- Birch street*, Corinth street to Penfield street. Measurement of gutter paving.
- Boylston street*, Nos. 19 to 25. Measurement of edgestone and gutter paving.
- Boylston street*, No. 173. Measurement of sidewalk paving.
- Brandon street*, corner Birch street. Line and grade for edgestone and measurement of edgestone and sidewalk paving.
- Call street*, corner Carolina avenue. Measurement of sidewalk paving.
- Carolina avenue*, corner Call street. Measurement of sidewalk paving.
- Centre street*, at Park street. Measurement of gutter paving.
- Centre street*, at Starr lane. Measurement of concrete sidewalk.
- Centre street*, corner Forbes street. Line and grade for edgestone, line and grade of edgestone tested, inside grade for artificial stone, and measurement of artificial stone sidewalk.
- Centre street*, corner Park street. Grade for edgestone and measurement of edgestone, gutter and sidewalk paving.
- Chestnut avenue*, from Armstrong street. Measurement of sidewalk and gutter paving.
- Corey street*, at Pomfret street. Measurement of gutter paving.
- Cornell street*, Kittredge street to Poplar street. Line and grade for construction.
- Cranston street*, Nos. 39 to 59. Line and grade of edgestone tested.
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- Danforth street*, Nos. 53-55. Measurement of sidewalk paving.
- Eliot street*, No. 38. Measurement of sidewalk paving.
- Elm street*, No. 34. Measurement of sidewalk paving.
- Florence street*, Ashland street to the bend. Line and grade for construction.
- Forbes street*, Centre street to No. 20. Line and grade for edgestone, line and grade of edgestone tested, inside grade for artificial stone and measurement of artificial stone sidewalk.
- Forbes street*, Nos. 43 to 61. Line and grade of edgestone tested, inside grade for artificial stone and measurement of artificial stone sidewalk.
- Forbes street*, No. 50. Line and grade of edgestone tested, inside grade for artificial stone, and measurement of artificial stone sidewalk.
- Forest Hills street*, corner Washington street. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Glen road*, east of Forest Hills street. Measurement of sidewalk paving.
- Hewlett street*, corner Walter street. Line and grade for edgestone.
- Hyde Park avenue*, from Weld street, southerly. Measurement of gutter paving.
- Hyde Park avenue*, opposite Weld Hill street. Line and grade for edgestone and measurement of edgestone, sidewalk and gutter paving.
- Jamaica street*, corner Woodman street. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Kenneth street*, at Beech street. Measurement of gutter paving.
- Keyes street*, corner Washington street. Line and grade of edgestone tested, line and grade for edgestone, line and grade of edgestone tested, inside grade for artificial stone, and measurement of artificial stone sidewalk.

- Lorraine street*, No. 35. Line and grade for artificial stone sidewalk.
- Montview street*, opposite Park street. Measurement of gutter paving.
- Mt. Vernon street*, La Grange street to Vermont street. Line and grade for gutters and measurement of gutter paving.
- Mt. Vernon street*, Nos. 19 to 31. Measurement of gutter paving.
- Park street*, from Centre street to Montview street. Line and grade for construction and measurement of gutter paving.
- Park street*, from Centre street to Corey street. Line and grade for construction and measurement of edgestone sidewalk and gutter paving.
- Paul Gore street*, No. 96. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Perkins street*, near Prince street. Measurement of gutter paving.
- Perkins street*, Zamora street to Catalpa street. Measurement of edgestone and gutter paving.
- Pomfret street*, from Maple street to Corey street. Line and grade for construction.
- Poplar street*, corner of South street. Measurement of sidewalk paving.
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- School street*, Nos. 164 to 172. Measurement of edgestone, sidewalk and gutter paving.
- Sheldon street*, at Prospect avenue. Measurement of gutter paving.
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- South street*, at Dudley avenue. Measurement of gutter paving.
- South street*, between Keyes street and Boynton street. Measurement of gutter paving.
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- Spring street*, corner Centre street. Line and grade for construction and measurement of gutter paving.
- Spring street*, opposite Church street. Line and grade for edgestone.
- Spring Park avenue*, No. 10. Line and grade of edgestone tested, inside grade for artificial stone and measurement of artificial stone sidewalk.
- Starr lane*, corner Centre street. Line and grade for edgestone.
- Stratford avenue*, easterly side, corner Clement avenue. Line and grade for artificial stone sidewalk.
- Stratford avenue*, easterly side, near Clement avenue. Line and grade for artificial stone sidewalk.
- Summer street*, between Powell street and Autumn street. Measurement of gutter paving.
- Walter street*, corner Hewlett street. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Washington street*, between Hyde Park avenue and Walk Hill street. Line and grade for edgestone and measurement of edgestone, gutter and sidewalk paving.
- Washington street*, between Kittredge street and Albano street. Measurement of edgestone and gutter paving.
- Washington street*, corner Forest Hills street. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Washington street*, near Metropolitan avenue. Measurement of edgestone and gutter paving.

- Washington street*, Nos. 3140 to 3144½. Line and grade of edgestone tested and measurement of artificial stone sidewalk.
- Washington street*, Nos. 3236 to 3240. Measurement of gutter paving.
- Washington street*, No. 3524. Line and grade of edgestone tested, line and grade for edgestone, line and grade of edgestone tested, inside grade for artificial stone and measurement of artificial stone sidewalk.
- Weld avenue*, No. 6. Measurement of edgestone, gutter and sidewalk paving.
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- Wenham street*, Nos. 72 to 90. Measurement of edgestone, gutter and sidewalk paving.
- Woodman street*, corner Jamaica street. Line and grade for edgestone, revised grade for edgestone and measurement of edgestone and gutter paving.

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- Cambridge street*, at Brookline Gas Company. Grade for edgestone.
- Cambridge street*, at Dustin street. Measurement of concrete sidewalk.
- Cambridge street*, near Eleanor street. Measurement of edgestone and crosswalk paving.
- Cambridge street*, at Mechanic street. Measurement of crosswalk and gutter paving.
- Chestnut Hill avenue*, opposite Chiswick road. Line and grade for edgestone and measurement of edgestone, crosswalk, and gutter paving.
- Chestnut Hill avenue*, at Winship street. Measurement of crosswalk paving.
- Commonwealth avenue*, at Babcock street. Measurement of crosswalk paving.
- Commonwealth avenue*, at Naples road. Measurement of crosswalk paving.
- Commonwealth avenue*, between Babcock street and Winslow road. Line and grade for artificial stone, revised grade for artificial stone and measurement of artificial stone sidewalk.
- Commonwealth avenue*, Brighton avenue to Warren street. Plan and profiles for revising grade of centre roadway, line and grade for dish gutters and measurement of gutter paving.
- Commonwealth avenue*, Warren street to Chestnut Hill avenue. Line and grade for constructing roadways and slopes, line and grade for dish gutters and catch-basins and measurement of gutter paving.
- Dustin street*, corner Cambridge street. Line and grade for edgestone, and measurement of edgestone and gutter paving.
- Faneuil street*, at Parsons street. Measurement of edgestone and crosswalk paving.
- Gardner street*, Nos. 84-88. Line and grade for artificial stone, line and grade of artificial stone tested and measurement of artificial stone sidewalk.
- Market street*, No. 58. Line and grade of edgestone tested, inside grade for artificial stone, and measurement of artificial stone sidewalk.

Market street, at Western avenue. Measurement of edgestone, crosswalk and gutter paving.

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North Beacon street, at Everett street. Measurement of crosswalk paving.

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Royal road, No. 30. Line and grade for sidewalk.

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Warren street, at Commonwealth avenue. Grade for edgestone and measurement of edgestone and gutter paving.

Washington street, Nos. 326-328. Line and grade of edgestone tested, inside grade for artificial stone and measurement of artificial stone sidewalk.

Washington street, corner Wirt street. Measurement of crosswalk paving.

Washington street, No. 555. Line and grade for edgestone, line and grade of edgestone tested, inside grade for artificial stone and measurement of artificial stone sidewalk.

Winship street, at Union street. Measurement of crosswalk paving.

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¹ Vol. 8 is a set of Architects' plans, and has been transferred to the Public Buildings Department.

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"	" " " Boston, made in 1866-67	109
"	" " " Boston, made in 1888	75
"	" " " Suffolk-st. district, made in 1869	9
"	" " " South Boston, made in 1880	65
"	" " " Roxbury, made in 1880	101
"	" " " Burnt district	73
"	" " " Mt. Hope Cemetery	26
"	" " " Winthrop Farm	49
"	" " " Hanover avenue	44
"	" " " Muddy river	44
"	" " " Pemberton square, Court-House site	215
"	" " " East Newton street, lots on, sold by auc- tion, made in 1888	42
"	" " " Public lands in South Boston, sold by auc- tion, made in 1885	82
"	" " " Public lands in South Boston, sold by auc- tion, made in 1888	8
"	" " " Boylston street, old Public Library lot	17
"	" " " Public lands in South Boston, sold by auc- tion, made in 1882	136
"	" " " Boston Directory map, made in 1886	60
"	" " " Boston, scale, 1,600 feet to an inch, made in 1890	250
"	" " " Boston, scale, 800 feet to an inch, made in 1891, colored plans	5
"	" " " Boston proper, scale, 500 feet to an inch, made in 1894	13
"	" " " Exhibit No. 1, City Surveyor's Report, 1893	108
"	" " " Exhibit No. 2, City Surveyor's Report, 1893	112
"	" " " Exhibit No. 3, City Surveyor's Report, 1893	110
"	" " " High street, public lands sold by auction	16
"	" " " Beacon Hill, State House site	41
"	" " " Harrison avenue, Savage School-house lot, auction plan	57
"	" " " Boston proper, showing changes in street and wharf lines from 1795 to 1895	560
		<hr/> 4,470

ARCHITECT DIVISION.

The duties of this division are to furnish to the different departments, upon application, information, sketches, estimates, etc., on all matters pertaining to the construction, alteration and equipment of buildings, and to prepare plans and specifications, and to superintend the construction of alteration work. The Consulting Architect of the department is connected with this division, and through him the division acts in an advisory capacity to the Mayor in all architectural matters, including the approval of plans and specifications and of contracts and changes in the same. The office has been organized as an expert force, and every effort has been made to place at the disposal of the different departments full and reliable information on matters of architectural design, and construction, plumbing, heating and ventilating, power plants, cooking and laundry apparatus, elevators, etc., etc.

The services of the division along the above lines have been in demand throughout the year by nearly every department, as shown in the appended itemized statement of work performed, and has unquestionably had a strong influence in obtaining better and more economical work in all building matters.

The office is maintained upon a business basis, employing men only for such time as there is actual work for them. Charges are made against other departments only in cases where plans are made and construction work actually performed and superintended. These charges have averaged about $2\frac{1}{2}$ per cent. of the cost of construction.

The need of an expert office for reference has been well established, together with the fact that its legitimate work can be performed at the greatest convenience and at the lowest cost by an office of this kind. The greatest field of influence of the division will lie in consultation and alteration work, together with the preparation of schemes and estimates, rather than in the actual construction of large and important new buildings which, under the present system, are placed in charge of architects in private practice.

The total cost of the division for the year has been \$12,529.40, which is properly distributed as follows:

For approval of plans, specifications, contracts, etc., and changes in the same	\$2,500 00
For reports, sketches and other consultation work	4,500 00
For plans, specifications and superintendence of work actually constructed	5,529 40
Total cost of division	<hr/> \$12,529 40
Total amount charged off against other city departments	4,650 71
Net cost to Engineering Department	<hr/> <hr/> \$7,878 69

The following is a synopsis of the work performed by the division for the year ending January 31, 1900.

Plans and contracts have been approved by the Consulting Architect for the following construction work:

Erection and Completion.

Bigelow School, South Boston.
Chapman School, East Boston.
Temporary School, Monroe street.
Winship School.
Grammar School, Quincy and Perth streets, Dorchester.
Primary School, Parker street, Roxbury.

Heating and Ventilating.

Dorchester High School.
East Boston High School.
South Boston High School.
West Roxbury High School.
Mechanic Arts High School, addition to.
Quincy and Perth streets School, Dorchester.

Plumbing.

Frothingham School.
Quincy and Perth streets School.
Mechanic Arts High School, addition to

Grading.

West Roxbury High School.
Webster avenue Primary School.
Frederick A. Whitney School.

Miscellaneous.

Frothingham School, masonry.

Quincy and Perth-streets School, plastering, carpentry, etc.

Mechanic Arts High School, furnishing.

Boston Elevated Railway stations, Atlantic avenue, Dover street.

Apartment house, fronting on park property, J. P. Leahey, owner.

Columbia Yacht Club-house, on park property, South Boston.

Catholic Church, Columbia road, Dorchester.

Residence, fronting on park property, Back Bay, H. S. Bradley, owner.

Additions to the contracts for the various city buildings, now in process of construction, aggregating the sum of \$18,137.87, and deductions aggregating the sum of \$6,378.20, were carefully checked up and report made to the Mayor as to their correctness.

Reports have been made on the following matters:

On the conditions governing the architectural competition for Mt. Hope Chapel, Cemetery Department.

On the amount charged by the Repairs Division for work performed by them for Park Department.

On the amount charged by the Repairs Division for work performed by them for Trustees for Insane.

On charge for architectural services by J. Lyman Faxon.

On charge for architectural services by James Mulcahey.

On heating and ventilation of East Boston High School.

On renewal of drains, Men's Dormitory, Long Island.

On storage tank and water connection, Charlestown Alms-house.

On cost of house, fronting on park property, J. P. Leahey, owner.

On scheme of decoration proposed for Armory, Ancient and Honorable Artillery Company, Faneuil Hall.

On building limit line, South Boston Strandway, Park Department.

On steam supply to water service pump, Long Island.

On boiler capacity, City Hall.

On condition of Engine-house No. 43, South Boston.

On roof construction of East Boston High School.

On settlement of chimney and wall of chapel, Austin Farm.

On cost of proposed waiting-room and drinking fountain, Brighton avenue, Street Department.

On machinery and shafting, Parental School, West Roxbury.

On alterations of heating system, Women's Dormitory, Long Island.

On heating and ventilation plans, Quincy and Perth streets School.

On alterations of heating system, Men's Dormitory, Long Island.

On "Sydney Smith" boiler settings.

On elevators and proposals for same for City Hospital.

On erection of an ambulance stable, South Boston.

On amount to be paid for purchase of steam, Faneuil Hall.

On alteration of dormitory building, Rainsford Island.

On additional heating surface required, hospital, Long Island.

On party-wall agreement, Fire Department headquarters building.

On hot water apparatus, Convenience Station, Park street.

On condensation, laundry building, Pierce Farm.

On extension of boiler-house, Pierce Farm.

On cost of steam supplied by Fire Department to Dover-street bath-house.

Sketch plans have been made and submitted on the following architectural problems :

For extension of hospital buildings, Deer Island.

For enlarging Convenience Station, Park street.

For rearrangement of rooms and lockers, South Boston gymnasium.

For Convenience Station, Ward 19, Roxbury.

For proposed power-house, Long Island.

For proposed bakery, Long Island.

For proposed laundry building, Long Island.

For alterations of Chemical No. 11 house.

For rearrangement of quarters occupied by Printing Department.

For rearrangement of shower baths, South Boston gymnasium.

For tower clock, South Ferry head-house.

For stable, sheds, wash-room, etc., Street Department, East Boston.

For balustrade, Ipswich-street bridge.

For cattle tie-up, Long Island.

For temporary school building, Parental School.

For gymnasium building, Ward 9.

- For extension of boiler-house, Pierce Farm.
- For removal of Mechanics Building organ to West Church, Cambridge street.
- For removal of Mechanics Building organ to Ward 17, ward-room, Dudley street.
- For alterations, Engine-house No. 23, Northampton street.
- For grading grounds around Ward 17 ward-room, Dudley street.
- For ambulance stable, South Boston.
- For arrangement of laundry machinery, Long Island building.
- For alteration, dormitory building, Rainsford Island.
- For proposal coal bunker, Rainsford Island.
- For proposed coal bunker, Long Island.
- For tablet, South Boston gymnasium.
- For tablet, Dover-street bath-house.
- For tablet, Convenience Station, Park street.
- For shelter, Congress-street bridge.
- For shelter, Summer-street bridge.
- For float, run, etc., Ward 3 playground, Charlestown.
- For winter housings of stairs, Convenience Station, Park street.
- For alteration, Ward 19 ward-room, for gymnasium purposes.
- For proposed Nurses' Home, Long Island.
- For proposed extension of hospital, Long Island.
- For proposed extension of west wing, House of Correction, South Boston.
- For proposed Sloyd building, Parental School.
- For proposed coal bunker, Parental School.
- For proposed combination library, public bath, etc., Hay-market square.
- For Convenience Stations, Post Office square.
- For alterations, Mayor's private office.
- For canopy, Council Chamber, City Hall.
- For alteration, dormitory building, Parental School.
- For brick administration building, Parental School.
- For wooden administration building, Parental School.
- For new dormitory building, Parental School.
- For chapel, Parental School.

Plans have been traced and detail drawings have been made for changes in offices, for inside finish, cupboards, lockers, closets, etc., etc., for various departments.

The following is a statement of the work, together with the cost of the same, performed and superintended by this Division :

Bath Commission :

Gymnasium, Commonwealth

Park \$14,779 72

Convenience Station, Park

street 15,000 00

Convenience Station, Ward 19 . 1,624 50

Alteration, Gymnasium, Ward 9, 1,150 73

Public Landing, Dorchester . 998 91

Miscellaneous, floats, rafts,

houses, lockers, runs, etc., etc. 2,360 37

\$35,914 23

Children's Trustees Department :

Parental School :

Temporary school building,

alteration of buildings, heat-

ing, etc. . . . \$7,276 84

Rainsford Island :

Repairing wharf damaged by

storm, repairing burned

dormitory building, miscel-

laneous alterations. . . 19,157 06

26,433 90

Election Commission :

Alteration of booths, miscellane-

ous alterations in ward-rooms,

putting up rails, etc. . . \$5,081 71

5,081 71

Engineering Department :

Faneuil Hall, reconstruction of . \$30,229 29

Drawtender's House, Summer-

street Bridge . . . 1,903 00

32,132 29

Fire Department :

Chemical No. 11, house, altera-

tion \$6,695 18

Ladder-house No. 8, alterations, 1,478 68

Engine-house No. 43, altera-

tions 566 02

Miscellaneous alterations . 2,147 42

10,887 30

Hospital Department :

Machinery and shafting, Laun-

dry Building . . . \$2,125 00

Conduit work . . . 3,300 00

Carried forward . . . \$5,425 00 \$110,449 43

<i>Brought forward</i> . . .	\$5,425 00	\$110,449 43
Elevator, Surgical Building . . .	3,842 00	
New steam mains . . .	2,388 00	
Miscellaneous alterations . . .	8,014 96	
	<hr/>	19,669 96
Insane Trustees Department:		
Extension of boiler-house, miscellaneous alterations, piping, etc.	\$7,897 37	
Miscellaneous alterations, Pierce Farm	1,990 49	
	<hr/>	9,887 86
Lamp Department:		
Alterations, storehouse	\$2,500 34	
	<hr/>	2,500 34
Pauper Institutions Department:		
Miscellaneous alterations, Charlestown Almshouse . . .	\$2,478 47	
Miscellaneous alterations heating, plumbing, etc., Long Island	5,624 48	
Power-house and Equipment, Long Island	48,105 54	
	<hr/>	56,208 49
Penal Institutions Department:		
Extension of Contagious Hospital Buildings, Deer Island, . . .	\$9,778 00	
	<hr/>	9,778 00
Printing Department:		
Alterations in offices, etc. . . .	\$1,840 50	
	<hr/>	1,840 50
Public Buildings Department:		
Ambulance Stable, Ward 15, South Boston	\$4,876 94	
Grading grounds, Ward 17 ward-room	1,455 00	
Miscellaneous alterations in public buildings, etc.	7,461 99	
	<hr/>	13,793 93
Suffolk County:		
Alterations in plumbing system, etc., Charles-street Jail . . .	\$3,504 77	
	<hr/>	3,504 77
Grand total		<hr/> <hr/> \$227,633 28

[FROM THE CITY ENGINEER'S REPORT TO THE
WATER DEPARTMENT.]

During the past year 27.4 miles of main pipe have been laid and 10.5 miles abandoned, making a net increase of 16.9 miles, and a total length in the system of 706.1 miles; the pipe laid can be classified as follows:

	Miles.
(1) Extension of large supply mains	2.2
(2) Extension for new buildings (by petition)	7.1
(3) Work done in advance of street construction	6.6
(4) Relaying old or small mains	8.5
(5) Miscellaneous work necessitated by other construction, etc.	3.0

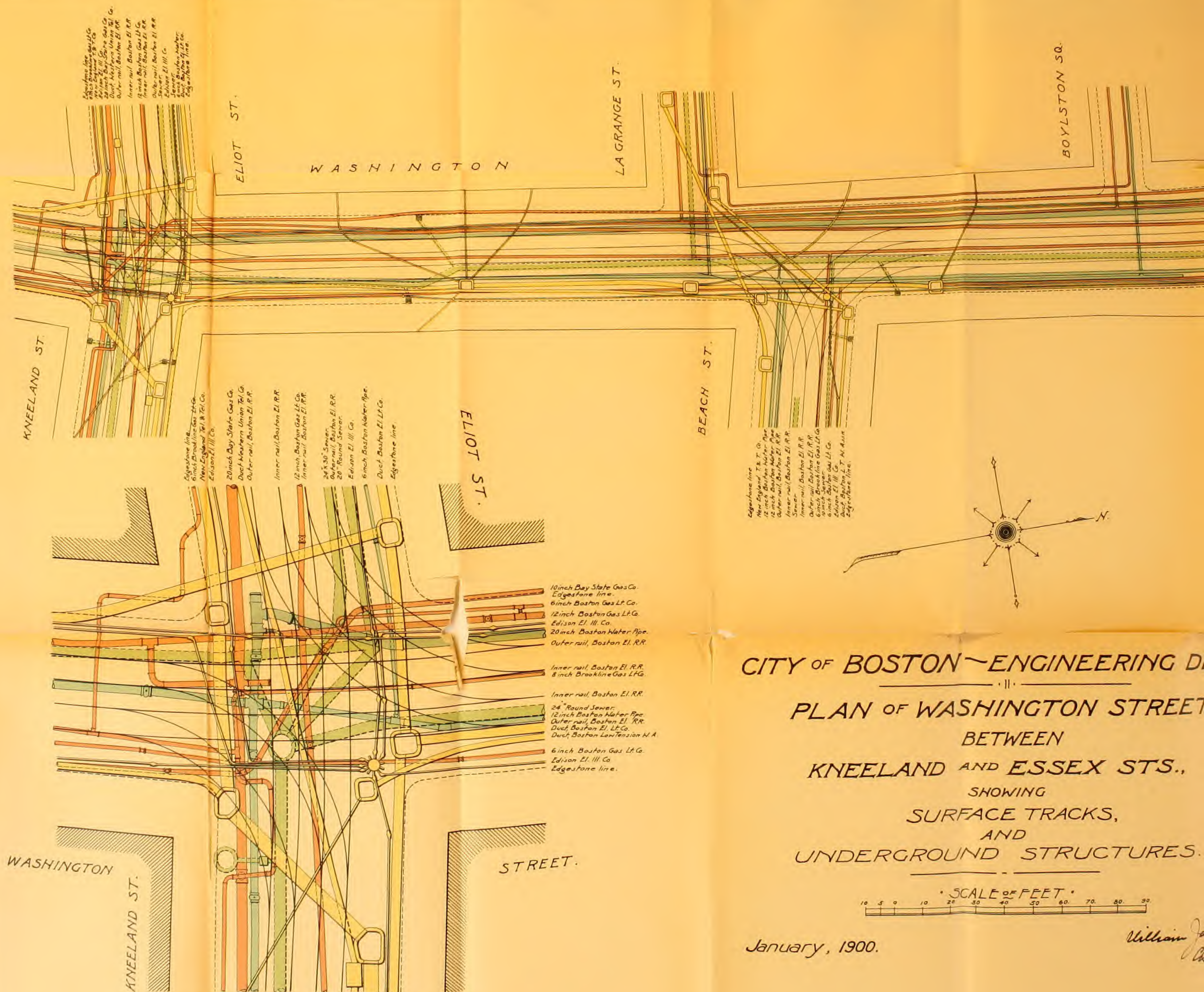
In addition to the work demanded by the natural growth of and improvements in the city there is an increasing necessity for relaying small mains in order to ensure ample fire protection; for several years past much has been done in this direction, but an equal or increased amount of relaying is required in the future.

It will be necessary to lay at least twenty-five miles of pipe yearly under present conditions.

The following is a brief statement of the most important work done during the year, for all of which plans were furnished, lines and grades given when required, and the actual construction inspected.

The 24-inch high service main in West Roxbury was extended in South street to Centre street and thence through Centre street to Spring street, reducing at Beach street to twenty inches; connections were made at Beach, La Grange, and Spring streets. The completion of this main to Spring street has improved very greatly the service in the south-westerly portion of West Roxbury.

A 20-inch low service main was laid in Washington street from Boylston to Kneeland street under difficulties of location shown by accompanying plan; connection was made at Kneeland street with the existing 16-inch pipe in Washington street, and from this point a 16-inch main was laid in Kneeland street to Atlantic avenue, replacing the old 6-inch pipe; in

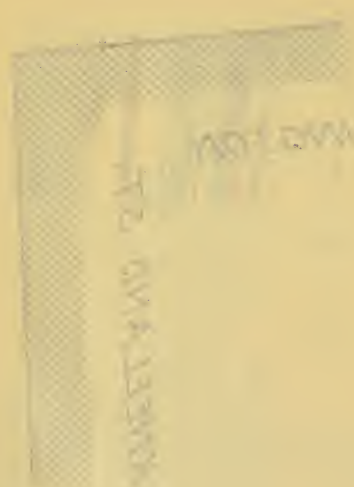


CITY OF BOSTON - ENGINEERING DEPARTMENT
 PLAN OF WASHINGTON STREET
 BETWEEN
 KNEELAND AND ESSEX STS.,
 SHOWING
 SURFACE TRACKS,
 AND
 UNDERGROUND STRUCTURES.

SCALE OF FEET
 10 20 30 40 50 60 70 80 90

January, 1900.

William J. ...



WASHINGTON

TO THE

INTEREST

Atlantic avenue the old 12-inch main was relaid with 16-inch as far as Oliver street. This work was made necessary by the new conditions brought about by the construction of the South Terminal Station.

The 12-inch low service main in Western avenue, Brighton, was relaid with 16-inch from Barry's corner to Everett street, and it is intended to carry the larger main as far as Market street, to improve the fire protection for the large industries in this neighborhood.

A 16-inch pipe was laid in Columbia road, between I and O streets, under contract by O'Rourke & Nelson.

A 16-inch main was laid in Q street, South Boston, from East Third to East Sixth street. A 16-inch main was laid in Talbot avenue from Nightingale street to Washington street. A 16-inch main was laid in Bowdoin street from Beacon street to Somerset street. Two 12-inch mains were laid in Commonwealth avenue, on the westerly side from Warren street to Chestnut Hill avenue, and on the easterly side from Warren street to Wallingford road.

In a number of localities 10-inch and 12-inch pipe were laid replacing mains of a smaller size, notable on Beacon Hill and in the neighborhood of Faneuil Hall square in the City Proper, in Charlestown, East Boston, and South Boston, in the northern part of Roxbury, in Jamaica Plain, and in the neighborhood of Neponset, Dorchester. This work was all caused, entirely, by the need of more water for fire protection, the supply being ample for domestic service in each case.

A large amount of relaying and changing pipe was caused by the extension through the city, easterly from Columbus avenue, of the Boston & Providence Railway; by the work of the Massachusetts Pipe Line Company; by the operations of the Boston Elevated Railway and Transit Commission, and by the abolishment of grade crossings at Summer-street extension and Dorchester avenue.

Some of the work done under the above heads is as follows :

FOR THE BOSTON & PROVIDENCE RAILROAD.

250 feet of 20-inch pipe was relaid on Columbus avenue.

250	"	12	"	"	"	"	"	"
320	"	4	"	"	"	"	"	"
100	"	12	"	"	"	"	"	"
450	"	6	"	"	"	"	"	"
140	"	16	"	"	"	"	"	"
100	"	12	"	"	"	"	"	"
220	"	12	"	"	"	"	"	"
130	"	6	"	"	"	"	"	"
350	"	12	"	"	"	"	"	"
250	"	6	"	"	"	"	"	"

with 6-inch pipe on Cazenove street.
was laid on Chandler street.
was relaid with 12-inch pipe on Chandler street.
on Washington street.
" " " "
" " Motte street.
with 12-inch pipe on Way street.
on Albany street.
" " Seneca street.

80 feet of 6-inch pipe was relaid on Oneida street.
 120 " 12 " " " Lehigh street.
 300 " 12 " was raised on Harrison avenue.

A Deacon meter was established at Tremont and Compton streets to replace one abandoned at corner Tremont and Castle streets.

FOR THE MASSACHUSETTS PIPE LINE COMPANY.

Main pipes were changed at 41 different points in Charlestown, Brighton, Roxbury, West Roxbury, and Dorchester to allow the large gas-pipe to be laid, and a large number of service-pipes were changed in 23 streets on the same account.

FOR THE BOSTON ELEVATED RAILWAY.

384 feet of 24-inch pipe was relaid in Main street, Charlestown.
 1,900 " 16 " " " Main street, Charlestown.
 25 " 12 " " on Commercial street at Clark street.
 36 " 6 " " " Commercial street at Foster street.
 170 " 12 " " " Commercial st. at Greenough lane.
 49 " 6 " " " Commercial st. at Greenough lane.
 60 " 4 " " " Atlantic avenue at Pearl street.
 16 " 8 " " " Atlantic avenue at Central wharf.
 140 " 16 " " " Causeway street at Fitchburg Railroad Depot.
 139 " 8 " " with 12-inch pipe on Washington street, south of Rollins street.
 300 " 6 " was lowered on Zeigler street, Roxbury.

The 16-inch pipe in Main street, Charlestown, was changed at 16 points to avoid foundations for posts.

The 8-inch pipe in Washington street was changed at 10 points for the same reason.

A number of services, hydrants, etc., were changed.

FOR THE TRANSIT COMMISSION.

560 feet of 12-inch pipe was relaid with 16-inch in Causeway street.
 200 " 12 " was raised in Charlestown street.
 165 " 12 " " " Endicott street.
 140 " 6 " was laid in Charles River avenue.

ON ACCOUNT DORCHESTER AVENUE GRADE CROSSING.

150 feet of 30-inch pipe was lowered on Swett street.
 125 " 20 " was relaid on Boston street.
 125 " 16 " " " Boston street.
 425 " 12 " was relaid or lowered on Boston street.
 40 " 12 " " lowered on Dorchester avenue.
 90 " 6 " " raised on Kemp street.

A number of hydrants, etc., were changed.

During the year a large section, containing 6,000 people, in Charlestown, was changed from high to low service, and in the neighborhood of Milton Lower Mills a section containing 3,000 people was added to the high service.

Three additional connections were made with the large mains of the Metropolitan Water Board, viz.: a 16-inch on Morton street, near Blue Hill avenue; a 16-inch on River street at Morton street; and a 16-inch on North Harvard street at Spurr street. The connections previously made with the Metropolitan Water Board mains are as follows:

A 36-inch on Beacon street, near Harvard street, Brookline.

A 30-inch on Pearl street at Walnut street, Somerville.

A 24-inch on Broadway at Walnut street, Somerville.

A 20-inch and a 24-inch on Broadway at Williams street, Chelsea.

A 20-inch on South street at Morton street.

A 12-inch on Orient avenue near Farrington street, East Boston.

The policy of abolishing the old Boston hydrants has been continued during the year, 138 being abandoned.

Two new recording gauges have been established in Dorchester and two have been abandoned; two have been established in Brighton, and one in West Roxbury.

The results of the work done by the men operating the Deacon meters have been computed, and monthly statements of the waste found have been made.

THE CORROSION OF PIPES BY ELECTROLYSIS.

During the past year there has been no marked improvement in electrical conditions in the pipe system, while nothing has been observed to indicate a greater cause for uneasiness than in the past. The fact that conditions are ever changing, owing to the construction of new lines of electric railway, the laying of new pipe lines, etc., demands intelligent and constant investigation that new dangers may be detected and guarded against before serious damage occurs; this field of work is largely without precedent, and an element of uncertainty in regard to actual conditions must obtain. While it is true that the return systems of electric railways have been improved in the past few years, it is equally true that the use of electricity for motive power is rapidly increasing, and that the water pipe proves, too often, to be the line of least resistance to the power station.

The following extracts from the report of Messrs. Stone & Webster describes the work done by them during the year, and the existing conditions as determined by them:

"In accordance with your request, we have, in the year 1899, as in preceding years, made an electrical survey in all parts of the City of Boston where the electric car tracks are located, to determine, if possible, the extent or likelihood of injury to the water mains and services by corrosion due to the electric current escaping from the return systems of the street railways.

"In our last year's report we showed by diagram how, in a general way, the conditions compared with those of the previous year, and for this report we have paid still more attention to getting data for comparison. We took pains to obtain readings at the same places as in 1898; and furthermore we took the readings twice between piping system and tracks, once in the spring and a second time in the autumn.

"*Appendix A*, to this report, gives in tabulated form the three sets of readings, *i.e.*, 1898, spring of 1899 and autumn of 1899, respectively. The maximum values are given wherever the readings fluctuated, and for convenience the figures are recorded to only the nearest half volt."

“VOLT-METER READINGS BETWEEN PIPING SYSTEM
AND TRACKS.

“These readings are taken to ascertain the general tendency of the flow of electric current, which, under existing conditions, is bound to escape in larger or smaller quantities from the car tracks and on to the water pipes, as it seeks the path of least resistance in completing its circuit back to the power station. Where the piping system, which for convenience we shall also speak of as ‘hydrant,’ is of higher potential than the track, as shown by what we call a plus (+) or positive reading, the presumption is that here the current is flowing off the piping system through the ground back to the rails. On the contrary, where it is of lower potential, as shown by a negative reading, the flow is presumably in the reverse direction. Single readings, however, are hardly reliable in an investigation of this kind, and often, after many readings in a given locality, we have but general indications of how the current is flowing.

“Corrosion by electrolysis takes place only where the current leaves the metal, whether to flow through the earth back to the rails, or on to some other pipe, or simply around a joint of poor electrical conductivity. Since, however, the current which flows off must necessarily first have flowed on, indications of a large current flowing on to the piping system are to be considered as indirect danger signs. Furthermore, since a perfect return system would carry the entire current back to the power station, without any of it flowing along the water pipes, these symptoms of escaping current afford a rough index as to the quality of the street railway returns.

“*Appendix A* is inserted for a study of the conditions in detail; *Appendix B*, a table of averages, and *Appendix C*, a diagram giving a general view, contain most of the data essential for understanding the conclusions which we have drawn from this part of the examination.

“In our report for 1898 we gave the averaged hydrant readings of the familiarly recognized districts of the city, as East Boston, Charlestown, City Proper, and the like; giving these districts the somewhat arbitrary boundaries which we thought would best serve the purpose. In this report, however, we have adopted what we consider a more logical classification, though it may appear at first sight less simple. We have grouped the readings according to general size, holding to the usual geographical boundaries only where they happen to be convenient.

“These hydrant readings and their averages, thus recorded

can, we think, be easily misunderstood, and therefore as our interpretation we offer the following:

“One volt positive, or one volt negative, between hydrant and rail, is approximately the average of all the readings for the years 1898 and 1899. Taking this as a standard we assume, for the present, that the piping system in all the districts in which the averages do not exceed this amount is free from any widespread, serious electrolytic corrosion. On this basis the following districts, except possibly in very small sections, are not in danger of immediate trouble to water pipes: I. East Boston; III. City proper; IV. South Boston; VI. most of South End; VIII. most of Brighton; XI. a large section of Dorchester; and also District B, along North Beacon street, Brighton (location of the Newton and Boston Street Railway).

“It will be noticed by referring to tables in *Appendix A*, and *B*, that the highest single reading in any of the above-mentioned districts was -3 . volts; this was in South Boston, at one hydrant in the spring, and at another near by in the autumn. But since these two cases are so isolated, and since they indicate a flow on to and not off from the pipes, we need call attention to them only for future comparison. Other local high readings also occur in these districts; as, for instance, on Bowdoin street, Dorchester (District XI.), near Geneva avenue and near Olney street. These were $+2.5$ and $+2$, respectively, and were taken this last autumn. Being positive readings they point to a possible danger district; but since the other positive readings of that vicinity are so much smaller we consider the value of these particular ones to be principally for reference in future examinations.

“Of the districts that showed a higher average than the standard, II., including most of Charlestown, averaged for its negative readings -2.5 volts, with a maximum (in 1898) of -8 ; but evidently the extension of the tracks over the top of Bunker Hill, to connect again at the bottom with those on Main street at Sullivan square, has bettered the return system, as shown by the readings in 1899. The reading of -4 last spring on Chelsea street is unusually high, but too local to be considered of much significance just now. District XV., on Alford street, Charlestown, and across the Malden bridge, with an average of positive readings of over $+2$, and a maximum (in the spring) of $+4$ would, we think, in all probability suffer much from electrolysis to-day, were it lined with houses. So long, however, as we know of no trouble that has developed here, and while there are so few service-pipes on Alford street, we should hardly call this a serious danger district.

“District V., along Harrison avenue, between Dover and Northampton streets, has an average of positive readings decidedly higher than the standard, being $+1.9$ for the spring and $+1.7$ for the autumn, with maxima of $+3$ and $+2.5$, respectively. The negative readings were too low to consider. This is a danger district which we shall refer to again when we speak of excavations.

“District VII., Back Bay, has no positive readings, but its negative readings averaged about -1.5 volts, with a maximum of -3.5 , in both spring and autumn. Since, however, the maximum readings are so isolated, and since the average is so slightly above the 1 volt, we do not consider its condition as serious.

“District IX., along Chestnut Hill Reservoir, is without positive readings, but shows indications from the large negative readings that much current tends to flow on to the pipes, the average being over -3 volts in the spring and over -4 volts in the autumn, with a maximum of -5 . Whether this is due to inferior rail-bonding, and whether there actually is a large flow of current, as indicated, we cannot be sure without making careful and somewhat complicated tests, which we think would be worth the while another season.

“A source of trouble which we have not considered a serious menace to the pipes in Boston, but which has been thought serious in other cities, as proved by actual cases of electrolysis, is the flow of current along the water mains themselves. So long as the joints in the pipes are such good electrical conductors that there is little or no tendency for the current to flow around them, and hence to cause corrosion when it leaves the pipe, we know of no harm done by the current simply flowing along the mains. Experience in Boston seems to show that serious trouble from this flowing around joints has rarely occurred here. One probable case, in the South End district, we shall consider under the head of ‘Excavations.’

“District X., Roxbury and part of West Roxbury, although showing a somewhat high negative average for 1898, shows by later measurements an improved condition. The local high readings on Centre street are not so high as in 1898, and we understand that the Boston Elevated Railway has taken much pains to remedy the peculiarly high reading on Washington street, near Morton, where the Norfolk & Suburban Street Railway also has a terminus.

“District XII., Field’s Corner and Neponset, has no negative readings, but a high average of positive ones. It is a

danger district where serious trouble has been found which we shall consider under the head of 'Excavations.'

"District XIV., Blue Hill avenue, between Grove Hall and Walk Hill street, has no positive readings worth considering, but a high negative average, and, like the Reservoir District, will warrant particular study to see how much current is actually flowing.

"District XV., Charlestown, we considered with District II.

"As a whole, the hydrant readings along the Boston Elevated Railway system had nearly the same average as the standard of 1 volt, positive or negative; and, as compared with most of the other street railways which enter the city, the Elevated shows a more efficient return system.

"The districts other than those of the Boston Elevated do not, for the most part, show particularly high averages; but this characteristic was noticed, that the size of the reading depends largely upon whether a car is near. In general, the smaller the system, *i. e.*, the fewer the cars, the more sensitive to the nearness of the cars is the voltage between hydrant and rail, and consequently the flow of current. Thus, the maximum of 10 volts last spring on Washington street, in the district of the West Roxbury & Roslindale Street Railway, maintained only for a moment, shooting up, as it were, as the car approached from Forest Hills Station. This fact should be remembered in judging of the danger threatened by smaller roads, for the damage to be done by a large flow of current depends upon how long a time it flows.

"District A, of the Lynn & Boston Railroad, we visited for the first time this autumn. It is but a short strip on Breed's Island, and the readings were low, except for the few moments that the car was near. It may be that in the summer season, during Sunday traffic, the current flows on to and off the pipes in large quantities, so that we would reserve our decision as to how much trouble may be apprehended from this source until we have taken measurements under more representative conditions.

"District B, along North Beacon street, Brighton, part of the Newton & Boston Street Railway, shows almost no signs threatening serious trouble. Here is a recently laid track, in operation only about two years, and if that company maintains it in as good condition as we have found, we should be surprised to learn of any trouble to water-pipes resulting in the near future.

"District C, in Squantum and the neighboring section of Quincy, part of the Quincy & Boston Street Railway, showed the high negative average of -3 , with a maximum of -6

last autumn. Just like District A, of the Lynn & Boston, this district should be visited at a time when there is heavier traffic than we have found.

“District D, along River street, Dorchester, part of the Norfolk Suburban Street Railway, shows a high positive average in the autumn, and a high negative average in the spring. The readings in this district have evidently been much influenced by the opening of the Boston, Milton & Brockton Street Railway, which has a terminus on Eliot street, Milton, and which is fed from the same power station as the Norfolk Suburban in Hyde Park. We have not traced any metallic connection between the tracks of the two railways, but we think it possible that the pipes of the Metropolitan Water Works, affected by both of these street railways, have made a connecting link for the current so as to materially change the quantity and direction of its flow. A branch of the West Roxbury & Roslindale Street Railway connecting with the Norfolk Suburban at Mattapan, and fed from the same power station, also has probably affected the conditions. We shall consider this district again under the head of ‘Excavations.’

“District E, along Hyde Park avenue, also a part of the Norfolk Suburban Street Railway, showed particularly high positive readings in the spring, but a much improved condition in the autumn, when, however, the negative readings were somewhat high. As a whole, the road shows a return system inferior to that of the Boston Elevated; but of course the lighter traffic gives a different color to an interpretation of the size of the readings.

“District F, including most of the West Roxbury & Roslindale Street Railway, shows a lower average, particularly of positive readings, than might be expected of so small a road. It gave some high local negative readings, as on Washington street, between Forest Hills Station and South street, where there was a maximum of — 10 volts last spring. The new line to Mattapan, over Ashland street, gave somewhat high positive readings. Scarcity of service-pipes here, however, as in fact along the locations of this entire railway, should be considered in deciding the question of present damage to water-pipes.

“District G, a short length of the Needham & Boston Street Railway, has been opened recently, and one of the two readings which we took, being — 6, is sufficiently high to warrant further consideration in the near future, in order to learn approximately how much current leaks on to the mains and service-pipes.”

"EXCAVATIONS.

"For an inspection of the mains and services in certain localities where we suspected they might have been injured by electrolytic corrosion we requested that excavations be made, and short lengths of pipe exposed for examination.

"On Dover street, between Washington street and Shawmut avenue, there was a break in the main early last April, and our attention was called to it. Examination showed that in all probability the trouble was the result of electrolytic corrosion. The voltmeter readings which we took were at first misleading, because they differed widely according to which of the points of contact wires were attached. The pipe had been cut and the electric current, therefore, broken, so that the readings were not characteristic of the normal electrical condition of the pipe. A few days later, after the pipe had been mended, we again took voltmeter readings, not at the same spot, but at the excavations near by, and these showed a difference of potential of from +1 to +1.5 between pipe and rail, and from +.2 to +.4 between pipe and ground. This was on the high pressure main. The low pressure service-pipe showed a somewhat lower potential; but other readings at hydrants and high pressure gates in this section lead us to conclude that in general the relation between each of the two systems and the tracks is about the same.

"It is possible that the Dover-street main burst on account of recent action. We think likely, however, that most of its weakening took place several years ago, under conditions which have since been improved upon.

"Excavations at seven places on Harrison avenue, all between Dover and East Canton streets, revealed little or no corrosion, except in one place, the service to No. 491, somewhat north of the Central Power Station. The note we made of this excavation was as follows: Five feet down, damp clay, almost wet; +2.5 to track; +.3 to ground. Bad corrosion in places, tending to peel off, but not deep.

"How recently this corrosion was formed we cannot say; but considering the number of years the electric road has been installed and this power station in operation we were surprised that in these seven excavations worse symptoms of serious injury to water-pipes should not have appeared. Although slight corrosion is doubtless going on along the Harrison avenue service-pipes in this district we do not expect any general trouble to arise in the immediate future. We strongly recommend, however, that the authorities in charge

of the water-pipes in this, and in every other part of the city, take pains to keep, as far as practicable, specimens of all broken mains and services showing the character of the break and the condition of the pipe a foot or so at either side of it. All such evidence is useful in determining to what extent the trouble may have been due to current from the electric road.

"The voltmeter readings along River street, Mattapan, a location of the Norfolk Suburban Street Railway, and the fact that in many places between Blue Hill avenue and the Hyde Park boundary the ground is apt to be muddy for a considerable length of time after wet weather, led us to suspect that there might be trouble from electrolysis in this district. In two out of four excavations the corrosion was quite marked; in the third noticeable, but in the fourth almost imperceptible. The serious trouble threatened in the first two instances may be due to past conditions, but we think more likely it is owing to recent ones, because last autumn's readings in this locality were larger than heretofore, a fact that may be partially accounted for by the opening of the Boston, Milton & Brockton Street Railway, which uses the Hyde Park power station for feeding its lines in Milton. We know of no actual bursting of water-pipes from electrolysis in this district, but we think the same pipes should be examined next season to see if their condition has changed for the worse.

"A locality in which serious trouble has occurred, and where there promises to be more, is at Fields Corner, Dorchester, particularly along the short section of Park street, between Dorchester avenue and Adams street. Learning that here there had been several cases of service-pipes badly corroded so that they had to be removed and replaced by new ones, we requested that the pipes be exposed in several places on Park street and on the south side of the street where, in order to connect the houses with the water-main they run beneath the tracks and beneath the buried return feeders of the Boston Elevated Railway. Two representatives of that company examined the pipes with us. We give the data from our note-book as follows: November 25, 1899, 11 A.M., Park street, Dorchester. Service to No. 119. Pipe five feet down in somewhat damp gravel. Reading from pipe to ground (different places) +1 to +1.5 volts. Very marked corrosion, about $\frac{1}{16}$ inch deep, along the $2\frac{1}{2}$ feet of pipe that was exposed. A dark purple scale.

"Service to No. 101. Pipe 5 feet down, in damp clay. Reading from pipe to ground +1 volt (in various places).

Reading from pipe to rail +2. General corrosion, about $\frac{1}{16}$ inch deep, along most of the 10 feet of pipe that was exposed. Whitish in color. Pipe was laid about one month ago.

"Service to No. 129. Pipe 5 to 6 feet down, in damp gravel. Reading from pipe to ground $+\frac{1}{2}$ volt. Reading from pipe to rail $+\frac{1}{2}$ to +1 volt. Very much corrosion, nearly $\frac{1}{8}$ inch deep; caking off in pieces, say 3 inches long by 1 inch wide. Five feet of pipe exposed. Pipe should be taken out.

"Service to No. 121. Pipe 4 feet down in not very damp, clayey gravel. Reading from pipe to ground $+\frac{2}{5}$ volt. Reading from pipe to track $+\frac{3}{5}$ volt. Very much corrosion, almost as much as on service to No. 129. Pipe white on top, purple underneath. Probably corrosion was about $\frac{1}{8}$ inch deep, but most of it had been taken off by workmen.

"There seems to be no question but that the return electric current is doing much damage in this section at least, and we are told of a pipe that gave out near by on Dorchester avenue. The Boston Elevated Railway should, of course, be requested to take radical measures for stopping further damage. It seems to us that the underground feeder return system in all probability is largely the cause of trouble, as the current in the service-pipes which run beneath it finds an easy path through the damp soil and damp woodwork encasing the cement in which the bare returns are laid.

"We did not have excavations made for an examination of the iron water mains, but we strongly recommend that such an examination be made at an early date, for if the mains themselves are badly injured the sooner it is known the better.

"This is hardly the place to discuss what means of remedy should be adopted. Obviously, however, were the returns run in a terra-cotta conduit like the outgoing feeders the current from off the water pipes could not possibly flow on to them directly. This would doubtless relieve the situation to some extent, but since the electric car tracks run through that section of Park street where we have found the service pipes so much injured it might be necessary to take still further measures to effect a complete remedy."

“VOLTMETER READINGS ALONG SECTIONS OF TRACK.

“For the purpose of ascertaining in a general way the quality of rail-bonding, we took voltmeter readings along sections of track varying in length from 1,000 feet over 2,500 feet. We did this also in our investigation for the previous year, and we give the results, tabulated, in *Appendix D*, and in diagram form in *Appendix E*, reducing them to readings per 100 feet to allow of comparison. We have recorded the maximum readings when there was a fluctuation, and, for convenience, we have recorded only the approximate values. It will be noted that .3 volts per 100 feet is the highest maximum recorded and .008 per 100 feet the lowest. .3 volt per 100 feet is at the rate of over 15 volts to the mile, which is, of course, high, the averages for all the readings being .085 in 1899, and .035 in 1898 (when much fewer readings were taken).

“We have as yet done hardly more with this data than to use it for reference and comparison. In an examination for another city in 1893, where in one case we found a fall of potential of 7 volts per 100 feet, there was clearly evidence of neglected rail-bonding. In our report of that examination we took the somewhat arbitrary standard of .1 volt per 100 feet, and said that in places where the readings showed a difference of potential to be higher than this ‘the bonding is defective somewhere within the given interval.’”

“VOLTMETER READINGS ACROSS BOUNDARIES.

“We give in *Appendix F* the readings between Boston water-pipes and those of adjoining places for 1899 and 1898, recorded to approximate values. At the Hyde Park boundaries only are the readings particularly high, showing that the current has a tendency to flow off in large quantities from the Boston pipes. A further study along the Norfolk Suburban Street Railway on River street and Hyde Park avenue should be made, as on account of new railways installed on the same system the conditions are likely to change for the worse. Meantime, that company should be notified of the danger that threatens, and is already apparent from an insufficient return system.

“In *Appendix G* are voltmeter readings between hydrants and rails in Boston and in other cities and towns on either side of boundaries, which should be considered in connection with the above, as they are a check upon them. In the case of the Dorchester and Hyde Park boundaries, for instance,

they confirm the indications of a large flow of current off the Boston pipes and through the earth on to the Hyde Park pipes.

“READINGS ON METROPOLITAN WATER WORKS SYSTEM.

“We give in *Appendix H (a)* the tabulated voltmeter readings between the Metropolitan Water Works piping system and the Boston piping system, and also between the former and the Milton piping system; *(b)* the readings between the Metropolitan Water Works system and the street railway tracks.

“These readings were made on October 25, 1899, in co-operation with the Metropolitan Water Board. They show that the Metropolitan pipes carry a large quantity of current in certain localities. By a further study the pipes of that system may be found to assist in carrying the current from the Milton system, and thus to account for the large flow of current off the Boston pipes in the Mattapan district.

“We know of no specific injury, however, which has been done to the Metropolitan water-pipes by the electric current in the neighborhood of Boston; but there might be such serious difficulties, should corrosion thus occur, that we strongly recommend the continued co-operation in watching for possible trouble that may arise.

“SUMMARY AND CONCLUSION.

“In general, we think the City of Boston is comparatively free from injury to water-pipes due to electrolytic corrosion, considering heavy electric traffic on the street railway system. The serious trouble in Dorchester seems to be due not to negligence, but to conditions arising in spite of an effort to avoid them, and which cannot be fully accounted for as yet. The injury to the service-pipes in Mattapan seems to be largely due to conditions that have arisen within a year. The Norfolk Suburban Street Railway Company should be notified that its return system threatens serious trouble.”

ALPHABETICAL LIST OF STREETS IN APPENDIX A.

	Page		Page
Adams	111	Dorchester	101
Alford	113	Dorchester ave., 99, 101, 110	111, 112, 114
Ashland	115	Dover	99
Atlantic ave.	97	Dudley	107, 108, 110
Atlantic	114	E. Broadway	101
Bartlett	107	E. Eighth	101, 102
Beach	97	E. Third	101
Beacon	104, 107	E. Fourth	101, 102
Beech	115	E. Sixth	102
Belgrade ave.	115	E. Seventh	101, 102
Bennington	95, 113	Eliot	99
Berkeley	98	Eliot sq.	108
Beverly	98	Emerson	102
Blue Hill ave.	107, 112, 113	Essex	99
Border	95	Federal	99
Bowdoin	110	Geneva ave.	110
Bowdoin sq.	98	Grove	115
Boylston	98, 104	Hampden	108
Brandon	115	Hancock	110
Brighton ave.	105	Hancock (Quincy)	114
Brighton	96	Hanover	99
Broadway	98, 101	Harrison ave., 99, 100, 103	108
Broadway (Charlestown)	96	Harvard ave.	106
Bunker Hill	96	Haverhill	100
Caldwell	96	Haymarket sq.	100
Cambridge	98	High	100
Cambridge (Brighton)	105	Humboldt ave.	108
Cambridge (Charlestown)	96	Huntington ave., 104, 105, 108	114
Canal	98	Hyde Park ave.	100
Causeway	98	Kneeland	100
Centre	107, 115	Leverett	100
Chambers	98	Lexington	95
Chardon	98	Longwood ave.	105
Charles	98	Main	97
Chauncy	98	Market	106
Chelsea (Charlestown),	96, 97	Massachusetts ave., 103, 105	95
Chelsea (East Boston)	95	Meridian	98
Chestnut Hill ave	107	Merrimac	100
Columbia	110	Milk	111, 112
Columbus ave.	98, 103, 107	Neponset ave.	110
Commercial	98, 99	Norfolk	103
Commonwealth ave., 104, 105	106, 107	Northampton	106, 113
Congress	99	N. Beacon	115
Dartmouth	104	Oakland	
Dearborn	107		

	Page		Page
Orleans	95	Tremont row	100
Park	110, 112	Tremont (Brighton) . .	106
Perkins	97	Walley	113
Pleasant	100, 110	Walnut ave.	109
Portland	100	Walnut	112
River	114	Warren (Charlestown) .	97
Roxbury	108	Warren (Roxbury) . .	109
Saratoga	95, 96	Washington, 100, 101, 103, 104	
Savin Hill ave.	110	106, 109, 111, 114, 115	
Shawmut ave., 100, 103, 104		Washington (Dorchester), 110	
	108	111, 114	
South	100, 108, 115	Washington (Brighton), 106	
Spring	115, 116	Webster	96
Squantum	114	W. Broadway	101, 102
State	100	W. Eighth	102
Stoughton	110	Western ave.	106
Summer	100	W. Ninth	102
Sumner	96	W. Seventh	102
Tremont, 100, 104, 108, 109		W. Sixth	102

Appendix A.

Readings between Piping Systems and Street Car Track in City of Boston.

DISTRICT I. (EAST BOSTON.)

STREETS.	1898.		1899.			
			Spring.		Autumn.	
Bennington and London.....	+0	-0	-0	-0
“ “ Brooks.....	+ .5	-0	- .5	-0
“ “ Putnam.....	+ .5	-0	-0	-0
“ “ Prescott.....	+0	-0	-0	-0
Border Street, at Ferry-house.....					+0
Chelsea and Saratoga. <i>See</i> Saratoga.						
Lexington and Meridian. <i>See</i> Meridian.						
Lexington and Marion.....		-.5	+0	-.5	-0
“ “ Brooks.....		-.5	-.5	-.5
“ “ Putnam.....		-.5	+ .5	-0	-0
“ “ Prescott.....	+1	+1	+0	-0
“ opp. Car House, Eagle sq.	+0	+0	-.5
Meridian and Paris.....		-.5	-.5	-.5
“ “ London.....		-.5	+0	-0	-0
“ “ Saratoga.....		-0	+ .5	-0	-.5
“ “ Lexington.....		-.5	-.5	+0	-0
“ “ Monmouth.....		-.5	+ .5	-.5	+ .5	-0
“ “ W. Eagle.....		-0	-1	-.5
“ “ Condor.....		-.5	-1	-.5
Orleans and Webster. <i>See</i> Webster.						
Saratoga and Meridian. <i>See</i> Meridian.						
Saratoga and Chelsea and Shelby....		-0	+0	-0	-0
“ “ Bremen.....		-0
“ “ Swift.....	+0	-0	+0	-0	-.5
“ “ Moore.....	+0	-0	+ .5	-.5	-.5

DISTRICT I. (EAST BOSTON.)—*Concluded.*

STREETS.	1898.		1899.			
			Spring.		Autumn.	
Saratoga, 1 N. of Wordsworth.....	+ .5	— .5	+ .5	—0
“ 2 So. of Ford.....	+ .5	— .5
“ 1 “ “	+ .5	— .5	+ .5	— .5	+ .5
“ and Ford.....	+1	+ .5
Sumner and Lewis.....	+ .5	—0	— .5	— .5
“ “ 1 E. of Orleans	—1	+0	— .5	— .5
“ “ 1 W. of Seaver	— .5	—0	— .5
“ “ Webster.	—1	— .5	— .5
Webster and Orleans.	—1.5	+ .5	— .5	+0	— .5
“ “ 1 W. of Cottage.....	— .5	—0
“ opp. Brigham	—2	— .5	—2
“ and Sumner. <i>See</i> Sumner.
Average.....	+ .32	— .43	+ .37	— .35	+ .21	— .33

DISTRICT II. (MOST OF CHARLESTOWN.)

Brighton and Perkins.....	+ .5	+ .5	—1	+0	—0
Broadway and Caldwell.....	+1	+ .5	—0
Bunker Hill and Main	+ .5
“ “ Baldwin	+ .5	+ .5
“ “ St. Martin	+0	—0
“ “ Belmont.....	—0	—0
“ “ Cook or Sullivan	—8	+0	— .5	+ .5	—0
“ “ Elm	—4	+0	— .5	+0
“ “ Polk	—6	+ .5	— .5	+0	—0
“ “ Monument.....	—3	+ .5	— .5	+ .5	— .5
“ “ Tufts	—2	—1	+ .5	— .5
Bunker Hill and Chelsea. <i>See</i> Chelsea.
Caldwell and Broadway. <i>See</i> Broadway.
Caldwell and Perkins.....	+1	+ .5	+0	—0
Caldwell, half-way between Perkins and Broadway.....	+1	+ .5	+ .5
Cambridge and Main. <i>See</i> Main.
“ “ Parker	+ .5	— .5	+ .5	— .5
“ “ Crescent	+ .5	—1
Chelsea and Joiner	—3	—4	— .5

DISTRICT II. (MOST OF CHARLESTOWN.) — *Concluded.*

STREETS.	1898.		1899.			
			Spring.		Autumn.	
Chelsea and Henley	-3	-2	+0	-.5
“ “ Prospect	-2	-2	-1
“ “ Bunker Hill	-2	+1	+ .5	-.5
“ “ Bainbridge	-1.5	+0	-1.5	-1
“ “ Medford	-1.5	+1	-.5	-1
City sq. and Main. <i>See Main.</i>						
Main and west side of City sq.	-2	-2	+ .5	-.5
“ “ Pleasant	-2.5	-1	-1
“ “ Nash row or Wood	-2	-1.5	+ .5	-0
“ “ Phipps	-1.5	-1.5	-.5
“ “ Lincoln	-1.5
“ “ Mead	-1.5	-1	+0	-.5
“ “ Middlesex	+0	-.5	+ .5	-.5	-.5
“ north of Albion pl.	+1	+ .5	-.5	+ .5	-.5
“ and Allen	+ .5	-1	+ .5
“ “ Furbush ct.	+2	+1	+1
“ “ Cambridge	+1
Main and Alford. <i>See Alford.</i>						
Perkins and Brighton. <i>See Brighton.</i>						
Perkins and Caldwell. <i>See Caldwell.</i>						
Warren and Henley	-3	-1.5	-1.5
Average	+ .83	-2.52	+ .53	-1.18	+ .37	-.54

DISTRICT III. (CITY PROPER.)

Atlantic ave. and Kneeland	-.5	-1	+ .5
“ “ Essex	-.5	-0
“ “ Pearl	-2	-1	-5
“ “ 150 south of Broad	-1.5
“ “ Broad and High	-1.5	-2.5
“ “ Central	-1.5	-1.5	-1.5
“ “ Richmond	-1.5	-1.5	-2
“ “ Commercial	-2
Beach and Harrison ave. <i>See Harrison ave.</i>						
Beach and Kingston	-.5	-.5	-.5
“ “ South	-.5	-.5	-.5

DISTRICT III. (CITY PROPER.)—Continued.

STREETS.	1898.	1899.	
		Spring.	Autumn.
Berkeley and Tremont. <i>See</i> Tremont.			
“ “ Columbus ave. <i>See</i> Columbus ave.			
Beverly and Causeway. <i>See</i> Causeway.			
Beverly, 100 yds. N. of Causeway	—2		
Bowdoin sq., Court and Chardon	—1.5	—1	—1
Boylston and Washington. <i>See</i> Washington.			
Boylston and Tremont			+0
“ Charles, and Park sq.	— .5	— .5	— .5
“ opp. Subway, or west of Church	—1	—1	—1
Broadway and Washington. <i>See</i> Washington.			
Broadway and Harrison ave. <i>See</i> Harrison ave.			
Cambridge and South Russell	—1	— .5	— .5
“ “ Charles. <i>See</i> Charles.			
Canal and Haymarket sq. <i>See</i> Haymarket sq.			
Canal and Causeway. <i>See</i> Causeway.			
Causeway and Beverly	—1	—1	
“ “ Haverhill. <i>See</i> Haverhill.			
“ “ Canal		— .5	—1
“ “ Stanford, and Merrimac ..	— .5	— .5	—1
Chambers and Eaton	—1.5	— .5	—1
Chardon and Portland. <i>See</i> Portland.			
Charles and Boylston. <i>See</i> Boylston.			
“ “ Beacon	—1	—1	— .5
“ “ Plinckney	— .5	— .5	— .5
“ “ Cambridge	— .5	— .5	— .5
“ “ Allen	— .5	— .5	— .5
“ “ Leverett. <i>See</i> Leverett.			
Chauncy and Bedford	+0	+0	—0
“ “ Essex	+ .5	+0	+ .5
Columbus ave. and Berkeley	— .5	— .5	— .5
Commercial and Atlantic ave. <i>See</i> Atlantic ave.			
“ “ Clark.	— .5	—1	

DISTRICT III. (CITY PROPER.)—*Continued.*

STREETS.	1898.		1899.			
			Spring.		Autumn.	
Commercial and Hanover.....	—1	—1	—1
“ “ 250 ft. E. of Charter.....	—1	— .5
“ “ Prince.....	—1	—1	—1
Congress and State. <i>See State.</i>						
Dorchester ave. and Summer. <i>See Summer.</i>						
Dorchester ave. and Mt. Washington ave		+ .5	— .5	—1
Dorchester ave. and Kneeland. <i>See Atlantic ave.</i>						
Dorchester ave. 2 S. of Kneeland....	— .5
“ “ 1 N. of Foundry	— .5	+0	—0	—1
“ “ and W. First.....	— .5	—1	— .5
“ “ and W. Broadway..	+ .5	—0	+0	—0	— .5
Dover and Tremont. <i>See Tremont, Berkeley, and Dover.</i>						
Dover and Shawmut. <i>See Shawmut ave.</i>						
Dover and Washington. <i>See Washington.</i>						
Dover, bet. Washington and Harrison ave.....		+1
Dover and Harrison. <i>See Harrison ave.</i>						
Dover and Albany.....		+1
Ellot and Tremont. <i>See Tremont.</i>						
Essex and Chauncy. <i>See Chauncy.</i>						
Federal and Milk. <i>See Milk.</i>						
“ “ High.....	— .5	—0	—0
Hanover and Tremont. <i>See Tremont row.</i>						
Hanover and Washington. <i>See Washington.</i>						
Hanover and Prince.....	—1.5	—1	—1
“ “ Commercial. <i>See Commercial.</i>						
Harrison ave. and Beach.....	— .5	— .5	— .5
“ “ “ Kneeland.....	— .5	—0	— .5
“ “ “ Oak.....	+0	+0	—0	+0
“ “ “ Broadway.....	+0	+0	+0	—0
“ “ “ Onecida.....	+0	+0	+0
“ “ “ Rochester.....	+1	+1	+1

DISTRICT III. (CITY PROPER.)—*Continued.*

STREETS.	1898.	1899.			
		Spring.		Autumn.	
Harrison ave. and Dover.....	+ .5	+1	+1
Haverhill and Causeway.....	-1
Haymarket sq. and Canal.....	-1	-1
High and Federal. <i>See</i> Federal.					
Kingston and Beach. <i>See</i> Beach.					
Kneeland and Harrison ave. <i>See</i> Harrison ave.					-
Kneeland and Atlantic ave. <i>See</i> At- lantic ave.					
Kneeland and Dorchester ave. <i>See</i> Dorchester ave.					
Leverett and Cotting.....	- .5	- .5
“ “ Charles.....	- .5	- .5
Milk and Federal.....	-1	- .5
Pleasant and Shawmut ave. <i>See</i> Shawmut ave.					
Portland, Chardon and Merrimac....	-1	- .5
Shawmut ave., Pleasant and Tremont	+ .5	-0	+0
“ “ and Corning.....	+ .5	+ .5	+0
“ “ “ Castle.....	+0	-0
“ “ “ 1 N. of Lucas....	+1.5	+ .5	+ .5
“ “ “ Dover.....	+1	+1
South and Beach. <i>See</i> Beach.					
State and Congress.....	-1	-1
Summer and Washington. <i>See</i> Wash- ington.					
Summer and Dorchester ave.....	-1
Tremont and Boylston. <i>See</i> Boylston.					
“ “ Eliot.....	- .5	-0
“ “ Shawmut ave. <i>See</i> Shaw- mut ave.					
“ E. of Church.....	+ .5	+0	+ .5
“ and Compton.....	+ .5	+ .5	- .5
“ “ Dover.....	+1	+ .5	+0
Tremont row and Hanover.....	-1.5	-1
Washington and Hanover.....	-1.5	-1
“ “ Water.....	-1	-1
“ “ Summer.....	- .5	-0
“ Boylston and Essex....	+ .5	+0	+ .5
“ and Kneeland.....	- .5

DISTRICT III. (CITY PROPER.)—*Concluded.*

STREETS.	1898.		1899.			
			Spring.		Autumn.	
Washington and Harvard.....	—1	— .5	—1
“ “ Broadway.....	+ .5	+0	+0
“ “ Dover.....	+1.5	+1.5	+1
West Broadway and Dorchester ave. <i>See Dorchester ave.</i>						
Average.....	.59	.88	.43	.59	.38	.81

DISTRICT IV. (SOUTH BOSTON.)

Broadway. <i>See E. Broadway and W. Broadway.</i>						
Dorchester st. and Dorchester ave. <i>See Dorchester ave.</i>						
Dorchester and Ward	—1				
“ east of Jenkins.....			— .5	— .5
“ and Newman.....	—1		—1.5	— .5
“ “ E. Eighth. <i>See E. Eighth.</i>						
“ “ W. Sixth. <i>See W. Sixth.</i>						
Dorchester ave. and W. Broadway. <i>See under City Proper.</i>						
Dorchester ave. and W. Fifth			—1	— .5
“ “ “ W. Sixth. <i>See W. Sixth.</i>						
“ “ “ D.....	— .5				
“ “ 300 S. from crossing	— .5		— .5	—1
“ “ and D and W. of D (Norway Iron Wks)	— .5		— .5	—1
“ “ and Woodward.....	— .5		—1	— .5
“ “ “ Dorchester.....	—1		— .5	—1
E. and W. Seventh. <i>See W. Seventh and E.</i>						
E. and W. Eighth. <i>See W. Eighth and E.</i>						
E. Broadway and E	— .5		—0	— .5
“ “ “ Emerson	— .5	+0	— .5	— .5
“ “ “ L	—2		—2	—1.5
“ “ “ K. <i>See K.</i>						
E. Third and Emerson	— .5		—1	—1.5
“ Fourth “ L	—2.		—2	—1.5
“ “ “ N	— .5		—1	—1

DISTRICT IV. (SOUTH BOSTON.) — *Concluded.*

STREETS.	1898.	1899.	
		Spring.	Autumn.
E. Fourth and P	—1	—1.5	—1.5
“ Sixth “ L	—1	—2	—1.5
“ “ “ N	—1	—1	—3
“ “ “ P	—2	—3	—1.5
E. Seventh and K. <i>See K and E. Seventh.</i>			
E. Eighth and H	—1.5	— .5	— .5
“ “ “ Atlantic (Corrington)	—1	—1	—1
“ “ “ Knowlton	—1	—1	—1
“ “ “ Dorchester	—1	—1	—1
Emerson and E. Broadway. <i>See E. Broadway.</i>			
Emerson and E. Third. <i>See E. Third</i>			
K and E. Broadway		—1	
“ “ “ Seventh	—1.5	—1	—1
L and E. Broadway. <i>See E. Broadway.</i>			
L and E. Fourth. <i>See E. Fourth and L.</i>			
P “ “ “ <i>See E. Fourth and P.</i>			
P “ “ Sixth. <i>See E. Sixth and P.</i>			
Q “ “ Fifth			—1
W. Broadway and Dorchester ave. <i>See Dorchester ave. under City Proper.</i>			
W. Broadway and A	— .5	+ .5	+0 — .5
“ “ “ C	— .5	—0	— .5
“ “ “ E	— .5	— .5	—1
“ “ “ W. of Dorchester	— .5		
W. Sixth and Dorchester ave	—1	—1	—1
“ “ “ C	— .5	—0	—1
“ “ between E and D	— .5	—0	— .5
“ “ and Dorchester		— .5	— .5
W. Seventh and E	—1	— .5	—1.5
W. Eighth and E	— .5		
W. Ninth and Frederick	—1	— .5	—1
Average	— .89	+ .25	— .95 +0 —1.0

DISTRICT V. (HARRISON AVENUE, PART OF SOUTH END.)

STREETS.	1898.	1899.			
		Spring.		Autumn.	
Harrison ave and Perry.....	+1.5	+2	+2
“ “ 1 N. of Savoy.....	+1.5	+2	+2
“ “ and Rollins.....	+2	+2	+1.5
“ “ “ Union Park.....	+2	+2	+1.5
“ “ “ Malden.....	+2	+3.5	+2.5
“ “ “ Plympton.....	+2	+2.5	+2
“ “ “ E. Dedham.....	+2.5	+2.5	+2.5
“ “ “ E. Canton.....	+2.5	+3	+2.5
“ “ “ E. Brookline.....	+2.5	+3	+2
“ “ “ Sharon.....	+2	+2	+1.5
“ “ “ E. Newton.....	+2	+2	+2
“ “ “ Stoughton.....	+2	+2	+1
“ “ “ E. Concord.....	+2	+2	+1.5
“ “ “ Worcester sq.....	+1.5	+1.5	+1
“ “ “ E. Springfield.....	+1.5	+1	+1.5
“ “ “ Massachusetts ave.	+1.5	+1.5	+1.5
“ “ “ Northampton.....	+1	+0	—0	—0
Average.....	+1.88		+1.90		+1.66

DISTRICT VI. (MOST OF SOUTH END.)

Columbus ave., Chandler and Dartmouth.....	—1	+0	—1.5	+0	—1.5
Columbus ave., Warren ave., and W. Newton.....	—1	+0	—1	—1.5
Columbus ave., Massachusetts ave. <i>See Massachusetts ave.</i>						
Massachusetts ave. and Columbus ave.....	—1	—1	—1
Northampton and Tremont. <i>See Tremont.</i>						
Shawmut ave. <i>See Shawmut ave.</i>						
Washington. <i>See Washington.</i>						
Harrison ave. <i>See Harrison ave.</i>						
Shawmut ave. and Dwight.....	+1	+1.5	+1
“ “ “ Hanson.....	+1	+1.5	+1
“ “ “ Union Park.....	+1	+1	+1.5
“ “ “ W. Dedham.....	+1	+1.5	+1

DISTRICT VI. (MOST OF SOUTH END.)—*Concluded.*

STREETS.	1898.		1899.			
			Spring.		Autumn.	
Shawmut ave. and W. Brookline.....	+1	+1	+5
“ “ “ Rutland.....	+5	+5	+5
“ “ “ Worcester.....	+5	—0	+5	+0
“ “ “ Northampton	—0	+0	—0	—0
Tremont and Union Park.....	+5	+1	—0
“ “ W. Dedham	—1
“ “ W. Brookline.....	—5	—1	—0
“ “ W. Concord.....	—5	—1	—5
“ “ Northampton.....	—1	—1	—5
Washington and Acton.....	+1.5	+1
“ “ Waltham.....	+2	+2	+1
“ “ Union Park.....	+1.5	+1.5	+1
“ “ W. Canton.....	+2	+1
Washington and Blackstone sq. (drinking fountain)	+5	+1	+5
Washington and Rutland.....	+5
“ “ E. Concord.....	+5	+5	+0	—0
“ “ E. Springfield.....	+5	+0	—0
“ “ Northampton	+5	+0	+0
Average.....	+90	—63	+87	—81	+56	—30

DISTRICT VII. (BACK BAY.)

Beacon st. and Massachusetts ave...	—1.5	—1	—2.5
Beacon st. E. cor. Commonwealth ave.....	—1.5	—1	—1
Beacon and Mountfort.	—3.5	—2.5
“ “ St. Mary's.....	—3	—3.5
Boylston and Clarendon.....	—5	—1
“ “ Dartmouth.....	—1
“ “ 1 W. of Exeter.....	—1	—1	—1
Boylston and Massachusetts ave. <i>See</i> Massachusetts ave.
Commonwealth ave. and Beacon. <i>See</i> Beacon
Commonwealth ave. and Beacon. E. of St. Mary's	—5
Dartmouth and Boylston. <i>See</i> Boyl- ston.
Huntington ave. 1 W. of Irvington.	—1	—1

DISTRICT VII. (BACK BAY.) — *Concluded.*

STREETS.	1898.	1899.			
		Spring.		Autumn.	
Huntington ave. 1 W. of W. Newton	—1	—1.5	—1.5
Huntington ave. Massachusetts ave. See Massachusetts ave.					
Huntington ave. 1 W. of Bryant.....	—1.5	—1.5	— .5
“ “ 1 E. of Ruggles.....	—2	—1.5	—1.5
“ “ Longwood ave.....	—1.5	—1.5	—1
Longwood ave. and Huntington ave. See Huntington ave.					
Autumn.....	—3	— .5	—1
Massachusetts av. and Huntington av.	—1.5	—1	—1.5
“ “ “ Norway.....	—1.5	—1	—1
“ “ “ Boylston.....	—2	—2	—1.5
“ “ “ Beacon. See Beacon.					
Average	—1.6	—1.38	—1.4

DISTRICT VIII. (MOST OF BRIGHTON.)

Brighton ave., 1 W. of Commonwealth ave.....				— .5	—2.5
“ “ and Harvard ave. See Harvard ave.						
“ “ 1 S. E. of Cambridge...	+ .5	—0
“ “ S. E. cor.....			—1.
Cambridge. Last in Boston.....		— .5	+ .5	—0	—1
“ 1 E. of N. Harvard.....		— .5	—1	—1
“ 1 E. of Mansfield.....		— .5	—1	—0
“ 1 N. E. Harvard ave.	+ .5	—0	— .5	— .5
“ Harvard ave. See Har- vard ave.						
“ 1 S. E. of Harvard ave..	+ .5	—0	+ .5	—0	—1
“ 2 “ “ “ “	+0	— .5
“ 1 E. of Union sq.....				—0	— .5
“ Brighton ave. See Brighton ave.						
“ N. Beacon. See N. Bea- con.						
“ Eleanor.....	+0	— .5	+0	—0	—1
“ N. E. of Washington....	+ .5	—0	+1	—0	— .5
Commonwealth ave. Essex.....		—1	—2.5
“ “ St. Paul.....						—2

DISTRICT VIII. (MOST OF BRIGHTON.)—*Concluded.*

STREETS.	1898.		1899.			
			Spring.		Autumn.	
Commonwealth ave., W. of Babcock, cor. Winslow road	-1	-1	-1.5
Harvard ave. and Cambridge	+0	-0	-1
“ “ 1 S. of Cambridge	+ .5	-0
“ “ Brighton ave.	- .5	+0	- .5	-1
“ “ 1 North of Common- wealth ave.	-1	-2
“ “ Last in Boston.	-1	-1
Market. 1 S. of Waverly	+ .5	+ .5	+0	-0
“ Wicklow	- .5	- .5
“ 1 S. of Wicklow	+ .5	-0
“ North Beacon. <i>See</i> N. Bea- con.
“ Mapleton	+ .5	- .5	-0
“ Washington. <i>See</i> Washing- ton.
North Beacon and Cambridge	+ .5	- .5	- .5	-1
“ “ “ Market	+ .5	-0	+ .5	- .5	+0	-1
Tremont. Last in Boston	+ .5	- .5	- .5	- .5
Washington, opposite Market	+0	- .5	+ .5	- .5	+0	-0
“ 1 N. E. of Lake	+ .5	-0	+0	-0	- .5
“ Nonantum	+0	- .5	- .5	- .5
Western ave. Last in Boston	+1	+1
“ “ 2 from Cambridge line	+1	+1	+1
“ “ 5 “ “ “	+1	+ .5
“ “ Upton court (Grant pl.)	+1.5	+0
“ “ 2 E. of N. Harvard	+1.5	+1.5	+1
“ “ 2 W. of N. Harvard	+1.5	+2	+1
“ “ Telford	+1	+1
“ “ 3 W. of Everett	+1
“ “ 1 E. of Waverley	+1	+ .5
“ “ 1 E. of Market	+1	+1	+ .5
Average	+ .60	- .34	+ .74	- .48	+ .59	- .92

DISTRICT IX. (RESERVOIR PART OF BRIGHTON.)

STREETS.	1898.	1899.	
		Spring.	Autumn.
Beacon street, 1 st. in Brightou..... -4
Chestnut Hill ave. and Englewood ave.	-6 -1 -5
Commonwealth ave., 1 E. of Foster... -4 -5
“ “ Last in Boston.. ..	-6 -5 -3
Average.....	-6.0 -3.33 -4.25

DISTRICT X. (ROXBURY AND PART OF WEST ROXBURY.)

Bartlett and Dudley.....	-1
Blue Hill ave., S. of Dudley.....	-1	-1 -1
“ “ “ Woodville.....	-1.5	+05 -1
“ “ “ Maywood.....	-2.5	-3 -1
Blue Hill ave.—Otisfield.....	-1	-1 -1
“ “ Washington and Warren.....	+0	-15 - .5
Centre and Cedar	-1 -1
“ “ N. of Old Heath.....	+2
“ “ Columbus ave. See Columbus ave.
Centre and N. of Bickford.....	-8	-2 -1.5
Centre and Perkins.....	-8	-5 -2
“ “ Lakeville pl.....	-4	-3 -2
“ “ Thomas	-3	-4 -4
Columbus ave. and Davenport55 - .5
“ “ Ruggles.....	-15 -1
Columbus ave. and Station, Tremont, or Roxbury Crossing.....	-1.5	-1 -1.5
Columbus ave. and Cedar	-1 -1
“ “ “ New Heath.....	-1 -1.5
“ “ “ Centre.....	-1.5 -1.5
“ “ “ one-half way between Centre and Washington.....	-1 -1.5
Columbus ave. and Washington. See Washington.
Columbus ave. and Walnut ave.....	-1 - .5
Dearborn and Dudley. See Dudley.
Dudley and Washington55 - .5
“ “ Warren5 - .5
Dudley and Harrison ave. See Harrison ave.

DISTRICT X. (ROXBURY AND PART OF WEST ROXBURY.)—*Continued.*

STREETS.	1898.		1899.			
			Spring.		Autumn.	
Dudley and Dearborn.....				— .5		— .5
“ “ Hampden. <i>See</i> Hampden.						
Dudley and Blue Hill ave. <i>See</i> Blue Hill ave.						
Eliot sq., opp. Highland.....				—1		—1
Eustis and Washington. <i>See</i> Washington.						
Eustis and Harrison ave. <i>See</i> Harrison ave.						
Guild row and Roxbury. <i>See</i> Roxbury.						
Guild row, Washington, and Dudley. <i>See</i> Washington.						
Hampden and Albany.....	+ .5		+0	—0	+0	
“ “ Kemble and Adams ..	+ .5	— .5		— .5		— .5
“ “ Dudley.....		—1		—1		—1.5
Harrison ave. and E. Lenox	+ .5		+ .5		+0	—0
“ “ “ Hunneman.....		—1.5	+0	—0		—0
“ “ “ Eustis.....		— .5	+0			—0
“ “ “ Taber				— .5		— .5
“ “ “ Dudley.....		—1				—1
Humboldt ave. and Waumbeck				—1.5		—1
“ “ “ I N. of Seaver.....				—1		—1
Huntington ave. and Tremont. <i>See</i> Tremont						
Huntington ave. and Heath.....		—1.5		—1.5		—2.5
Roxbury and Elmwood		—1.5				—1.5
“ “ Guild row.....				— .5		
Seaver and Walnut ave. <i>See</i> Columbus ave.						
Shawmut ave. and N. and S. of Lenox.....		— .5	+0	—0		—0
“ “ “ Arnold.....	+ .5		+ .5		+0	
“ “ “ Sterling.....	+ 0.		+ .5	—0		—0
“ “ “ Ruggles		— .5	+0	— .5		— .5
“ “ “ Marvin		— .5	+ .0	— .5		—1
South and Child		—2.5		—4		—2
South and Washington. <i>See</i> Washington.						
Tremont and Hammond.....		— .5		— .5		— .5
“ “ E. of Sarsfield				— .5		— .5

DISTRICT X. (ROXBURY AND PART OF WEST ROXBURY.) — *Concluded.*

STREETS.	1898.	1899.	
		Spring.	Autumn.
Tremont and Culvert (=Whittier).....	—1.5	—1	— .5
“ “ Cottage pl.....		—2	— .5
“ “ Columbus ave. <i>See</i> Co- lumbus ave			
Tremont and Phillips.....	— .5	—1	—1
“ “ St. Alphonsus.....			—1.5
“ “ Huntington ave.....	—1	—1	—1.5
Walnut ave. and Columbus ave. <i>See</i> Columbus ave.			
Warren and Washington. <i>See</i> Wash- ington.			
Warren and Dudley. <i>See</i> Dudley.			
“ “ Moreland.....	— .5	— .5	— .5
“ “ Walnut ave.....		— .5	
“ “ Dunreath.....	—1.5	—1	— .5
“ “ Edgewood	—1.5	—1	—1
“ “ Quincy.....	—1	—1	— .5
“ “ Brunswick.....	— .5	—1.5	—1
“ “ Blue Hill ave. <i>See</i> Blue Hill ave., Dorchester.			
Washington and Newcomb.....		— .5	— .5
“ “ Ball	—0	— .5	—0
“ “ Eustis.	— .5	—1	— .5
“ “ Warren and Palmer.....	— .5	— .5	— .5
“ “ Dudley. <i>See</i> Dudley			
“ “ St. James.....	—1	— .5	— .5
“ “ Oakland and Dale..	—1.5	—1	—1
“ “ Kingsbury.....	—1		
“ “ Marcella.....			—1.5
“ “ Dimock.....	—1.5	—1	—1
“ “ Atherton and Co- lumbus ave.....	—2	—1	—1
Washington and Forest Hills st.....	—1.5	—2	—1
“ “ Green.....	+0	— 2	—1
“ “ No. Bennet (north end).....	—1	— .5	—2.5
Washington and Morton (Boston Ele- vated).....	+1	—4	—6
Average	— .56	—1.56	— .2 —1.14 +0 —1.06

DISTRICT XI. (PART OF DORCHESTER.)

STREETS.	1898.		1899.			
			Spring.		Autumn.	
Bowdoin and Washington. <i>See</i> Washington.						
Bowdoin and Oakley.....	+0	-1	- .5	+ .5
“ “ Geneva ave.....	+1	+ .5	-0	+2.5
“ “ Olney.....	+1	+1	+2
“ “ Hamilton	+ .5	+ .5
“ “ Quincy.....	+1
Columbia and Cushing ave.....	+0	- .5	- .5	+1
Columbia and Washington. <i>See</i> Washington.						
Columbia and Blue Hill ave. <i>See</i> Blue Hill ave.						
Dorchester ave. and Dorset (or Locust).....	-1	-1.5	-1
Dorchester ave. and East Cottage....	+ .5	- .5	+0	-1	+0	-1
“ “ “ Savin Hill ave...	+ .5	+ .5	-0	+ .5
Dudley and Shirley.....	-1	- .5	-1.5
“ “ Folsom.....	-1	+0	-1	-1.5
“ “ Monadnock.....	+ .5	- .5	+0	- .5	-0
Geneva ave. and Bowdoin. <i>See</i> Bowdoin.						
Geneva ave. and Westville.....	+ .5
“ “ “ Tonawanda.....	+ .5
“ “ “ Park.....	+1
Hancock and Glendale.....	+ .5	+ .5	+ .5
“ “ Freeport.....	+ .5	+0	- .5	+ .5
Norfolk and Washington.....	+ .5	-1	+ .5
“ “ Wentworth.....	+0	-0	-1	+0	- .5
“ “ Capen	+1	-1	-2	-2
Park and Geneva ave. <i>See</i> Geneva ave.						
Pleasant and Savin Hill ave.....	+1	+0	-0	+ .5
Savin Hill ave. and Dorchester ave. <i>See</i> Dorchester ave.						
Savin Hill ave. and Pleasant. <i>See</i> Pleasant.						
Stoughton and private way (west of Pleasant).....	+ .5	- .5	-1	+ .5
Washington and Columbia	+0	-2	-1	-0
“ “ Lynnville terrace....	-1	-1	-1
“ “ Faxon.....	- .5	- .5	+0

DISTRICT XI. (PART OF DORCHESTER.) — *Concluded.*

STREETS.	1898.		1899.			
			Spring.		Autumn.	
Washington and Bowdoin.....	—1	— .5	+ .5
“ “ School.....	+0	— .5	+ .5	+ .5
Washington and Coffee pl.....	+5	— .5	+ .5	—0
“ “ Rosedale.....	—1	— .5	+ .5	—1
“ “ Norfolk. <i>See</i> Norfolk.
“ “ Euclid.....	—2	— .5
“ “ Roslin.....	—1	—1	—1
Average.....	.44	.88	.33	.73	.68	.79

DISTRICT XII. (FIELD'S CORNER AND NEPONSET.)

Adams and Park.....	+2	+1.5	+2
“ “ 1 N. of Gibson.....	+2	+1.5	+1.5
“ “ Neponset ave. <i>See</i> Neponset ave.
“ “ Dorchester ave. <i>See</i> Dorchester ave.
Dorchester ave. and Creek.....	+ .5	+1
“ “ “ Freeport.....	+2	+1	+1.5
“ “ “ Lyon.....	+2	+2
“ “ “ Linden.....	+2	+2.5
Dorchester avenue and Leedsville (=Leeds).....	+1.5	+2.5	+2
Dorchester ave. and Ellet.....	+1.5	+2
“ “ “ N. of Greenwich.....	+1.5	+2
“ “ “ S. “ “.....	+1	+1.5
“ “ “ Adams (Field's Corner).....	+1	+2	+1.5
“ “ “ Charles.....	+1.5
“ “ “ Faulkner and E. of Faulkner... ..	+1	+1	+1.5
“ “ at Field's Cor. Transfer Station.....	+1
“ “ and Park.....	+1
Neponset ave. and Adams.....	+2	+1.5	+2
“ “ “ Saco.....	+2	+1.5	+2
“ “ “ 1 W. of Mill.....	+1.5	+1.5	+1.5
“ “ “ Mill.....	+2	+1.5	+2
“ “ “ 1 N. of King.....	+1.5	+1.5	+1.5

DISTRICT XII. (FIELD'S CORNER AND NEPONSET.) — *Concluded.*

STREETS.	1898.		1899.			
			Spring.		Autumn.	
Neponset ave. and Tileston pl.....	+2	+1	+2
“ “ “ S. of Pope's Hill st.	+1.5
“ “ “ Boutwell ave.....	+2	+1	+2
“ “ “ N. W. of Freeport	+1.5	+2	+2
“ “ “ S. W. “ “	+1
“ “ “ Blackwell.....	+1.5	+1.5	+1.5
“ “ “ Chickatawbut....	+2	+1.5	+1
“ “ “ 1 W. of Taylor ...	+2	+2	+1.5
“ “ “ Taylor.....	+2	+2	+2
Park and Dorchester ave. <i>See Dor-</i> <i>chester ave.</i>						
“ E. of Dorchester ave.....	+1	+1	+1
“ W. of Adams.....	+1.5	+1	+1
“ and Adams. <i>See Adams.</i>						
Walnut, E. of Neponset ave.....	+ .5	+ .5	+ .4
“ 1 W. of Rice.....	+2	+1.5	+1.5
Average.....	+1.66	+1.43	+1.56

DISTRICT XIII. (ASHMONT.)

Dorchester ave., S. of Gibson.....	+ .5	+ .5	+ .5
Dorchester ave. and Centre.....	+1
“ “ “ 1 N. of Lonsdale (= S. of Rosemont).....	+1	+0	—1.5	+ .5
Dorchester ave. and Bailey.....	+1	— .5	—1	+1
“ “ “ 2 S. of Codman..	+ .5	+0	—0	+1
“ “ “ 1 S. of Richmond	+2	— .5	+1	—1
Average.....	+1.0	— .5	+1.17	— .75	+ .83	—1.0

DISTRICT XIV. (BLUE HILL AVE., GROVE HALL TO MATTAPAN.)

Blue Hill ave. and Seaver.....	—1.5	—2
“ “ “ “ Glenway.....	—3.5	—3
“ “ “ “ Esmond.....	—3
“ “ “ “ Canterbury	—1.5	— .5
“ “ “ “ 1 N. of Harvard..	—3	—2	—4
“ “ “ “ 1 S. “ “	—5
“ “ “ gate between Harvard and Morton.....	—4	—3

DISTRICT XIV. (BLUE HILL AVE., GROVE HALL TO MATTAPAN.)—*Concluded.*

STREETS.	1898.	1899.	
		Spring.	Autumn.
Blue Hill ave. and Morton.....	—2	—2	—6
“ “ “ “ Evelyn.....			—4
“ “ “ “ 1 N. of Walk Hill.....	—5	—3.5	—2
Seaver W. of Blue Hill ave. <i>See Blue Hill ave.</i>			
Average.....	—3.17	—2.08	—3.63

DISTRICT XV. (CHARLESTOWN.)

Alford and Main.....	+ .5	+1.5	+2	
“ “ West.....	+2	+1.5	+2	
“ “ Arlington ave.....	+1.5	+2.5	+3	
Alford, between Arlington and the bridge.....	+3	+4	+2.5	
Alford, on bridge, S. of draw.....	+2	+3	+2	
“ opp. Poorhouse.....	+1	+ .5		—1
“ last in Boston.....	+ .5	— .5	— .5	—1
Average.....	+1.5	— .5	+2.17	— .5

DISTRICT A. (LYNN & BOSTON ST. RY. ORIENT HEIGHTS.)

Bennington and Orient Heights Sta..					— .5
“ “ Blackinton.....					— .5
“ “ 1 N. of Blackinton..					— .5
“ Leyden.....					— .5
Walley, last in Boston.....				+0	—6
Average.....				+0	—1.6

DISTRICT B. (NEWTON & BOSTON ST. RY. PART OF BRIGHTON.)

N. Beacon, W. corner Cambridge....	+ .5	— .5	— .5	—1
“ “ Dustin.....	+0	— .5	+0	— .5
“ “ Market.....	+ .5	—0	+ .5	— .5
“ “ 1 N.W. of Market,	+ .5		+ .5	— .5
“ “ 2 “ “				—1
“ Parsons.....	+ .5	—1.5	+0	—0
Average.....	+ .30	— .50	+ .25	— .40

DISTRICT C. (QUINCY & BOSTON ST. RY. PART OF QUINCY.)

STREETS.	1898.		1899.			
			Spring.		Autumn.	
Atlantic and Hancock.....	-4	-3	+ .5	-6
“ “ Squantum.....	-2	-3
Hancock and Newbury.....	-3	-6
Squantum and Atlantic. <i>See Atlantic.</i>
“ “ 1 N. of Atlantic.....	-3	-1.5
“ “ 2 “ “	-3	-1.5
“ “ end of car line.....	+ .5	-0
Average.....	-3	-3	+ .5	-3

DISTRICT D. (NORFOLK SUBURBAN ST. RY. PART OF DORCHESTER.)

Blue Hill and River. <i>See River.</i>
Dorchester ave., Washington and Adams.....	+ .5	+ .5	- .5	+1.5
River 1 W. of Washington.....	+ .5	-2	+1.5
“ Central ave.....	+1	-1	+4	-0
“ 5 W. from Central ave.....	+1.5	-1.5	+4
“ 10 “ “	+ .5	-1	+2
“ 1 N. E. of Blue Hill ave.....	+1	-1	+2.5
“ Blue Hill ave. and Oakland....	+2.5
“ 1 W. Blue Hill ave.....	+1.5
“ Malta.....	+2	-1.5	+6
“ last in Boston.....	+2	-1	+4
Washington, Adams and Dorchester ave. <i>See Dorchester ave.</i>
Washington, between Dorchester and River.....	+1
Average.....	+1.19	+ .5	-1.19	+2.77	-0

DISTRICT E. (NORFOLK SUBURBAN ST. RY. PART OF WEST ROXBURY.)

Hyde Park ave. 2 N. of Walk Hill....	+4
“ “ 1 “ “	+4	+2	-3
“ “ 1 S. “ “	+1	-1	+2.5	- .5	+ .5	-1
“ “ Neponset ave.....	-2	+4	+ .5	-0
“ “ 1 S. of Ashland.....	+1	-1	+3	+1
“ “ Richards ave.....	+4	- .5	+1
“ “ last in Boston	+1	+6	+1	-1
Washington and Morton.....	+6	-2	+2	-6
Average	+1.75	-1.33	+4.21	-1.0	+1.14	-2.2
D and E together average.....	+1.38	-1.33	+3.75	-1.14	+2.14	-1.83

DISTRICT F. (WEST ROXBURY AND ROSLINDALE STREET RAILWAY.)

STREETS.	1898.		1899.			
			Spring.		Autumn.	
Ashland and Sheldon.....					+2	—1
“ “ Rowe.....					+1.5	—1
“ “ Canterbury.....					+1.5	—1.5
“ last on pipe line.....					+2	—3
Beech 1 W. of Kenneth.....	+0	—4		—1	+0	
Belgrade ave. and Colberg ave.....		—3		—1.5		—2
Brandon ave. and South.....			+ .5	—3	+1	
“ “ 1 S. of South.....		—2				
Centre and 1 N. of Bellevue.....		—7		—1.5	+ .5	
“ “ Spring.....		—3		—2		— .5
“ “ 1 N. of Baker.....		—1	+ .5	— .5	+ .5	— .5
Grove W. from Washington.....	+ .5	— .5	+ .5	— .5	+ .5	— .5
“ and Washington. <i>See Wash- ington.</i>						
“ “ German.....	+2	—2	+0	—0	+1.5	—1.5
Oakland and Regent road.....					+1	—5
“ “ Hollingsworth.....					+1	
“ “ River. <i>See River.</i>						
South and Brandon ave. <i>See Bran- don ave.</i>						
Spring and Centre. <i>See Centre.</i>						
Washington 1 S. of Forest Hills sta..	+1	—3	+0	—0	+5	—4
Washington 1 S. of Bridge = 2d S. of Forest Hills sta.					+1	—1
Washington next South.....		—3	+0	—10		—5
“ “ “.....				— .5	+1	—5
“ “ “.....						—4
“ and South.....		—3	+1	—2	+1.5	—1.5
“ “ Albano.....				—1	+ .5	—2
“ next South.....		—1				
“ 1 N. of Beach.....			+ .5	—1.5	+1	—2
“ top of hill opp. car-house	+1		+ .5		+1.5	
“ 2 S. of LaGrange.....	+ .5		+ .5		+ .5	
“ and Grove.....	+1	— .5		— .5	+0	—1.5
“ “ Rockland.....		—1	+ .5	— .5	+1.5	
Average.....	+ .86	—2.36	+ .41	—1.70	+ .96	—1.76

DISTRICT G. (NEEDHAM & BOSTON ST. RY. PART OF W. ROXBURY.)

STREETS.	1898.		1899.			
			Spring.		Autumn.	
Spring, last in Boston.....	—6
“ and Centre.....	—5
Average	—3.25

*Appendix B.***Summary of Voltmeter Readings between Hydrants and Tracks.**

DISTRICTS.	1898.		1899.			
			Spring.		Autumn.	
Boston Elevated Railway Company.	+	—	+	—	+	—
I. East Boston.....	Mx. 1 Av. .3	2 .4	1 .4	.5 .4	.5 .2	2 .3
II. Most of Charlestown	Mx. 2 Av. .8	8 2.5	1 .5	4 1.2	1 .4	1.5 .5
III. City Proper.....	Mx. 1.5 Av. .6	2 .9	1.5 .4	1 .6	1 .4	2 .8
IV. South Boston.....	Mx. .. Av. ..	2 .9	.5 .3	3 .9	3 1
V. Harrison ave. (S. End)	Mx. 2.5 Av. 1.9	3.5 1.9	2.5 1.7
VI. Most of South End.....	Mx. 2 Av. .9	1 .6	2 .9	1 .8	1 .6	1 .3
VII. Back Bay.....	Mx. .. Av. ..	3 1.6	3.5 1.4	3.5 1.4
VIII. Most of Brighton.....	Mx. 1.5 Av. .6	1 .3	2 .7	1 .5	1 .5	2.5 .9
IX. Reservoir (part of Brighton)....	Mx. .. Av. ..	6 6	5 3.3	5 4.3
X. Roxbury and part of W. Roxbury	Mx. 2 Av. .6	8 1.6	.5 .2	5 1.1	6 1.1
XI. Part of Dorchester	Mx. 1 Av. .4	2 .9	1 .3	2 .7	2.5 .7	2 .8
XII. Field's Corner and Neponset ..	Mx. 2 Av. 1.7	2.5 1.4	2.5 1.6
XIII. Ashmont.....	Mx. 2 Av. 1	.5 .5	.5 .2	1.5 .8	1 .8	1 1
XIV. Blue Hill ave. (Dorchester)...	Mx. Av.	5 3.2	3 2.1	6 3.6
XV. Alford st. (Charlestown).....	Mx. 3 Av. 1.5	.5 .5	4 2.2	.5 .5	3 2.3	1 1





Summary of Voltmeter Readings between Hydrants and Tracks. — *Concluded.*

DISTRICTS.	1898.		1899.			
			Spring.		Autumn.	
	+	—	+	—	+	—
A. Breed's Island (L. & B.).....	Mx.	6
	Av.	1.6
B. N. Beacon (N. & B.).....	Mx. .5	1.5	.5	.5	1	1.5
	Av. .3	.5	.3	.4	.3	1
C. Squantum & Quincy (Q. & B.)....	Mx.	4	3	.5	6
	Av.	3	3	.5	3
D. River st. (N-S.).....	Mx. 25	2	6
	Av. 1.25	1.2	2.8
E. Hyde Park ave. (N. D.).....	Mx. 4	2	6	2	2	6
	Av. 1.8	1.3	4.2	1	1.1	2.2
F. W. Roxbury and Roslindale	Mx. 2	7	1	10	2	5
	Av. .9	2.4	.4	1.7	1	1.8
G. Spring st. (Needham & Boston)..	Mx.	6
	Av.	3.3

GENERAL SUMMARY.

RAILROADS.	1898.		1899.			
			Spring.		Autumn.	
	+	—	+	—	+	—
Boston Elevated Railway	Mx. 3	8	4	4	3	6
	Av. 1	1.2	.9	.9	.8	1
Other roads.....	Mx. 4	7	6	10	6	6
	Av. 1	2.1	1.5	1.4	1.3	1.8
All combined.....	Mx. 4	8	6	10	6	6
	Av. 1	1.3	1	1	1	1.1

*Appendix D.***Voltmeter Readings along Sections of Track.**

STREETS.	1898.		1899.	
	Approximate Distance.	Drop per 100'	Approximate Distance.	Drop per 100'
DISTRICT I. (EAST BOSTON.)				
Saratoga—Wordsworth to Bennington.....			2400'	.2
DISTRICT II. (CHARLESTOWN.)				
Alford—South from City line.....			2500'	.16
DISTRICT IV. (SOUTH BOSTON.)				
E. Broadway—G to H			700'	.09
E. Eighth—Old Harbor to G			900'	.04
DISTRICT VII. (BACK BAY.)				
Commonwealth ave.—St. Mary's to cross roads			2500'	.008
DISTRICT VIII. (BRIGHTON.)				
Tremont—Washington to Pembroke (Newton)			2500'	.02
“ near boundary to “ “	600'	.03		
DISTRICT IX. (BRIGHTON.)				
Commonwealth ave.—E. from Lake st.			2500'	.08
DISTRICT X. (ROXBURY.)				
Centre st.—Mozart to Forbes	800'	.06		
“ Lakeville pl. to Perkins st.			2300'	.04
Washington st.—Green to Keyes.....			1800'	.09
DISTRICT XI. (DORCHESTER.)				
Norfolk—Edson to Withington.....	1600'	.03		
“ Milton ave. to Nelson st			1800'	.02
Bowdoin st.—Geneva ave. to Hamilton.....	1600'	.02		
Dorchester ave.—Kemp to Locust.....	1400'	.06	1400'	.03
“ “ Howes to Thornley.....	1400'	.07		
DISTRICT XII. (FIELD'S COR. AND NEPONSET.)				
Dorchester ave.—Savin Hill ave. to Freeport.....			2100'	.06
Neponset ave.—King to Adams.....	1600'	.04	1600'	.03
DISTRICT XIII. (ASHMONT.)				
Dorchester ave.—Melville to King	1600'	.06		
“ Centre to King.....			800'	.03
“ 100 yds. N. of Richmond to Codman.	1600'	.03	2200'	.27



Voltmeter Readings along Sections of Track. — *Concluded.*

STREETS.	1898.		1899.	
	Approximate Distance.	Drop per 100'	Approximate Distance.	Drop per 100'
DISTRICT XIV. (BLUE HILL AVENUE.)				
Blue Hill ave.—Glenway to Canterbury	1400'	.02	1400'	.04
“ Morton to 2,500' N.....	2500'	.02
“ Fessenden to Morton.....	1800'	.01
“ Walk Hill to Morton	2400'	.008
“ Boston Elevated average....0407
DISTRICT A. (EAST BOSTON.)				
Bennington st.—Orient Heights to Leyden.....	1500'	.13
DISTRICT B. (BRIGHTON.)				
North Beacon st.—B. & A. crossing to 200 yds. W. of Market	2000'	.003
“ B. & A. crossing to Market.....	2400'	.06
“ R. R. side track crossing town of Watertown.....	2500'	.24
DISTRICT C. (QUINCY.)				
Squantum st.—N. E. from Atlantic to bridge over creek (about 2,000').	2000'	.08
DISTRICT D. (DORCHESTER.)				
River st.—2,000' W. of Central ave. to 500' W.....	1550'	.05
“ 2,000' W. of Central ave. to 500' W.....	1550'	.01
“ 3,000' W. of Central ave. to 500' W.....	2500'	.06
DISTRICT E. (WEST ROXBURY.)				
Hyde Park ave.—Richards ave. to Metropolitan ave..	2000'	.05
“ Boundary to Metropolitan ave.....	2000'	.3
DISTRICT F. (WEST ROXBURY.)				
Ashland st.—Harvard to Calvary Cemetery.....	1800'	.03
Centre st.—Grove to 2,500' N.....	2500'	.10
hington st.—S.W. from bridge at Forest Hills	2400'	.08
“ S.W. from bridge at Forest Hills	2500'	.08
“ N. from S. junction of South End	2500'	.06
“ Either side of La Grange.....	1440'	.003
“ Heron st. to 2,400' south.....	2400'	.2
DISTRICT G. (WEST ROXBURY.)				
Spring st.—Webster to 2,500' W.....	2500'	.06
A—G average.....02102
Grand average.....035085

*Appendix F.***Voltmeter Readings between Hydrants Across Boundaries of City.**

+ = Away from Boston. — = Towards Boston.

STREETS.	1898.	1899.
Brookline Boundary:		
Beacon st., across St. Mary's.....	— .5
“ “ “ Brighton boundary.....	— .06	0
Essex st. and Commonwealth ave.....	— .3
Harvard ave.	— .05
Huntington ave., across Parkway	— .5	—1
Cambridge Boundary:		
Brookline st., across Brookline bridge.....	+1.5	+1
Cambridge st. and River st.....	+1	+1.5
North Harvard st. and Boylston st.....	+1.5	+ .6
Western ave., across bridge.....	— .3	— .2 to + .1
Chelsea — (not city boundary, but between Boston and Chelsea pipes in Chelsea):		
Pearl and Maynard sts.....	+ .2 to —2	— .2
Dedham Boundary:		
Grove st.....	+ .4 to —1
Everett Boundary:		
Alford st. and Broadway	— .05 to + .01	0
Hyde Park Boundary:		
Hyde Park ave.....	+2.5	+11
River st.	+5 to —1	+10
Milton Boundary:		
Central ave. and River st.....	—2 to —28
Brook road and River st.....	+3 to —10
Eliot and Washington sts.....	+2 to 10
Newton Boundary:		
Newton boulevard and Commonwealth ave.....	+ .01 to —2	+1
Tremont st.....	+ .1 to —1	+1.5 to — .2
Quincy Boundary:		
Across Neponset bridge.....	—2	—1.2
Somerville Boundary:		
Broadway and Caldwell st.	—1	— .8
Cambridge and Washington sts.....	+ .01 to — .1	— .2
Watertown Boundary:		
North Beacon st. and Arsenal yard.....	+ .1 to — .3	—1.5 to + .1

*Appendix G.***Voltmeter Readings Between Hydrants and Rails on either side of Boundaries.**

STREETS. ^o	1898.	1899.	
		Spring.	Autumn.
Brookline :			
Babcock st., Brookline.....		-1.5
Commonwealth ave., Boston.....			-1.5
Beacon and St. Mary's st., Brookline.....		-3.5	-3
Last in (Back Bay) Boston.....		-3	-3.5
Beacon, opp. Strathmore road.....	-3		-4
Last in (Brighton) Boston.....			-4
Harvard, first in Brookline.....		-1	-2
Last in (Brighton) Boston.....		-1	-1
Huntington ave., first in Brookline.....		-1.5	-1
Last in (Roxbury) Boston.....		-1.5	-2.5
Cambridge:			
River st., first in Cambridge.....		+ .4 to -.2	- .8
Cambridge st., last in (Brighton) Boston....		+ .5 to -0	-1
Dedham :			
Grove st., first in Dedham.....	- .5	+ .2	- .2
Last in (West Roxbury) Boston.....	+ .2 to -.2	+0	+1.5 to -1.5
Everett:			
Broadway, first st. in Everett.....	-1	-1	-1
Alford, last in (Charlestown) Boston.....	+ .5 to -.5	- .5	-1
Hyde Park:			
River st., first in Hyde Park.....		-2	-4
Last in (Dorchester) Boston.....		+4	+4
Milton:			
Eliot st., south of Central ave.....			-12
River st. (Dorchester), Boston.....			+4 to -0
Newton:			
Newton boulevard, first in Newton.....			+3 to -4
Commonwealth ave., last in (Brighton) Boston.....			-3

**Voltmeter Readings between Hydrants and Rails on either side
of Boundaries. — *Concluded.***

STREETS.	1898.	1899.	
		Spring.	Autumn.
Tremont, first in Newton.....	— .6
Last in (Brighton) Boston.....	—1
Quincy:			
Hancock, first in Quincy.....	—3	—6
Neponset ave., last in (Dorchester) Boston.....	+2	+2
Somerville:			
Broadway, first in Somerville.....	+2	+1.5	+1
Last in (Charlestown) Boston.....	+1	+1	+ .5
Washington, first in Somerville.....	+0 to —.5	— .5	— .5
Cambridge st., last in (Charlestown) Boston.....	+ .5 to —.5	+ .5	— .5

*Appendix H.***(a.) Voltmeter Readings between Pipes of Metropolitan Water Works and those in Watertown, Boston and Milton.**

Metropolitan Water Works to Watertown system, Mount Auburn st., near Common st.....	+ .2 to — .5
Metropolitan Water Works to Boston Water Works, Beacon st. and Chestnut Hill ave.....	— .5
Metropolitan Water Works, north line, to Metropolitan Water Works, south line, Beacon st. and Chestnut Hill ave.....	— .4
Metropolitan Water Works to Boston Water Works, Boylston st. and Fisher ave., Brookline.....	+ .1
Metropolitan Water Works to Brookline Water Works, Boylston st., near Fisher ave., Brookline.....	— .05 to — .2
Metropolitan Water Works to Boston Water Works, Perkins and Prince sts., West Roxbury.....	— .5
Metropolitan Water Works to Boston Water Works, Morton and Washington sts.....	+ .1 to — .3
Metropolitan Water Works to Boston Water Works, Morton st., east of Blue Hill ave.....	— .1 to — .2
Metropolitan Water Works to Boston Water Works, River st., near Morton st., Dorchester.....	— .1 to — .5
Metropolitan Water Works to Milton Water Works, Lower Mills.....	+ .1 to — .3
Metropolitan Water Works to Milton Water Works, East Milton.....	+2 to + .1
Metropolitan Water Works to Brookline Water Works, Coolidge Corner.....	— 1
Metropolitan Water Works to Boston Water Works, Brighton and Harvard aves., Allston.....	— .4
Same on 15-volt scale (instead of 1.5-volt scale).....	— 1

(b.) Voltmeter Readings between Metropolitan Water Works, Pipes and Rails.

Mt. Auburn and Common sts. (Watertown B. El. Ry.).....	— 1 to — 2
Irving and North Beacon sts. (Watertown, N. & B. St. Ry.).....	+ .2 to — 1.5
Tremont st. and Waverly ave. (Newton B. El. Ry.).....	+ 1.5 to — 2.5
Ward st. and Commonwealth ave. (Newton B. El. Ry.).....	+ 5 to — 3
Beacon st. and Chestnut Hill ave. (Brighton B. El. Ry.).....	— 3 to — 5
(Boston Water Works and Boston Elevated Railway, Beacon st. and Chestnut Hill ave.).....	— 4 to — 6
Washington and Morton sts. (Forest Hills B. El. Ry.).....	— 3 to — 5
Blue Hill ave. and Morton st. (Dorchester B. El. Ry.).....	— 1 to — 2
(Boston Water Works, Morton st., east from Blue Hill ave. and B. El. Ry.).....	— 1 to — 3
River st., east of Morton st. (Dorchester N-S. St. Ry.).....	+ 1 to + 2
Milton Water Works, Adams and Eliot sts. and B., M. & Br. St. Ry....	+ 8 to — 14
Adams st., at East Milton Crossing (B., M. & Br. St. Ry.).....	+ 10 to — 14
Adams st., at East Milton Crossing (Q. & B. St. Ry.).....	+ .2 to — 10
Coolidge Corner (Brookline B. El. Ry.).....	— 4
Brighton and Harvard aves. (Allston B. El. Ry.).....	— 2 to — 4
(Same as 15, instead of 1.5-volt scale).....	— 1 to — 1.5

GENERAL STATISTICS.

BOSTON WATER DEPARTMENT.

Daily average amount used through meters,	
gallons	15,027,500
Number of services	86,091
Number of meters	4,618
Number of motors	115
Number of elevators	497
Length of supply and distributing mains, in	
miles	706.1
Number of public fire hydrants in use .	7,185
Yearly revenue from annual water rates .	\$1,475,815 57
Yearly revenue from metered water . .	\$937,861 40
Percentage of total revenue from metered	
water	38.8
Yearly expense of maintenance . . .	\$586,698 39

*Rainfall in Inches and Hundredths at Albany-street Pipe Yard, Boston,
for the Year 1899.*

1899.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1.....	0.29	0.10	1.15
2.....	0.46
3.....
4.....	0.74
5.....	0.15	1.02	0.03
6.....	0.02	0.71
7.....	1.12	0.46	0.40
8.....	0.80	0.72	0.12
9.....	1.12	0.49
10.....
11.....	0.09	1.11
12.....	0.03	0.09	1.70	0.13
13.....
14.....	0.27	2.00	0.18
15.....	0.45	0.95
16.....	0.75	0.10
17.....	0.96	0.27	0.56
18.....	0.60
19.....	0.22	1.70	0.09	0.11	0.34
20.....	0.40	2.80	0.12
21.....	0.14	0.21
22.....	0.02
23.....	1.58	0.04
24.....
25.....	1.60	0.04	0.16
26.....	0.21	2.40	2.21
27.....	0.13	0.05	0.24
28.....
29.....	0.33	0.97	1.22	0.20
30.....	0.04
31.....	0.12
Totals.	4.24	4.41	6.20	1.41	1.08	2.43	3.92	1.16	6.44	2.16	2.96	1.42

Total rainfall during the year 37.83 inches.

Rainfall in Inches and Hundredths at Gibson-street Pipe Yard, Dorchester, for the Year 1899.

1899.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1.....	0.65	0.10	1.10
2.....	0.52	0.11	0.45
3.....	0.50	0.10
4.....	0.75	0.94
5.....	0.06	0.90
6.....	0.02	0.97
7.....	1.25	0.57	0.75
8.....	0.62	0.80	0.60	0.02
9.....	0.05	0.70	0.70
10.....	0.04	1.07
11.....	0.15
12.....	0.03	0.09	0.01	0.47	0.99	0.03
13.....
14.....	0.42	1.14	0.06	0.14	0.03
15.....	0.05	0.43	0.04	0.96
16.....	0.87	0.12
17.....	0.97	0.32	0.46	0.09
18.....	0.03	0.48	0.05
19.....	0.40	1.64	0.10	0.07	0.20
20.....	0.35	3.13	0.14
21.....	0.29
22.....	0.17	0.25	0.06
23.....	1.84	0.02
24.....	0.07	0.18
25.....	2.17	0.13	0.07
26.....	0.21	2.43	0.24
27.....	0.31	0.02
28.....	0.02
29.....	0.29	0.03	0.97	1.65	0.30
30.....	0.09
31.....	0.12
Totals.	5.46	3.73	7.02	1.41	1.27	2.84	4.02	1.40	6.35	2.61	3.20	1.42

Total rainfall during the year 40.73 inches.

Average Maximum and Minimum Monthly and Yearly Heights, in Feet, Above City Base, to which Water would Rise at Different Stations on the Boston Water Works.

1899.	Boston Common.		Engine-house No. 9, Salem Street.		Engine-house No. 7, East Street.		Engine-house No. 38, Congress Street.		Engine-house No. 2, Fourth and O Streets.		Engine-house No. 16, River Street, Dorchester.		Engine-house No. 34, West Avenue, Brighton.		Engine-house No. 32, Runket Hill Street, Charlestown.		710 Albany Street.		City Hall, High Service.		Engine-house No. 18, Harvard Street, Dorchester, High Service.		Engine-house No. 9, Paris Street, East Boston.		Engine-house No. 24, Quincy Street, Roxbury, High Service.		Engine-house No. 29, Chestnut Hill Ave., Brighton, High Service.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
January...	122.3	107.2	121.9	105.2	121.7	105.5	119.9	104.4	117.8	99.8	121.4	104.4	147.6	141.5	121.9	107.4	249.0	243.2	245.8	235.7	147.0	136.8	247.6	241.9
February..	119.8	104.8	118.5	101.7	118.0	103.0	116.5	101.2	112.7	94.4	118.1	101.5	145.3	136.7	118.2	104.7	249.4	243.6	245.1	235.6	141.3	129.2	247.7	242.2
March.....	125.9	109.7	125.9	107.5	125.5	108.4	124.2	107.9	123.0	103.2	124.6	106.2	152.1	139.3	125.7	110.3	249.7	243.0	247.8	240.0	150.9	134.7	248.4	242.9
April.....	128.2	110.3	127.3	108.4	127.0	108.7	125.5	106.9	125.4	101.9	127.6	106.5	154.8	144.4	127.7	110.5	250.0	243.5	249.4	242.7	153.6	136.3	248.4	242.2
May.....	128.7	109.5	128.3	107.2	128.3	109.5	126.2	105.9	125.5	101.6	127.4	105.1	154.2	142.5	128.1	103.7	250.0	243.4	248.4	241.0	154.3	132.7	248.6	241.8
June.....	128.3	107.9	128.0	106.1	128.0	107.2	125.5	103.9	125.3	101.0	127.8	103.5	154.9	140.1	127.5	107.7	249.6	242.7	249.0	241.4	153.6	132.1	246.9	238.5
July.....	129.1	108.2	128.8	106.6	128.5	107.4	125.5	104.0	125.5	101.7	127.7	102.6	155.7	143.0	127.7	108.3	249.6	242.1	249.6	241.6	154.3	135.3	246.3	238.4	250.0	244.8
August....	128.7	110.1	128.2	108.9	128.3	109.4	125.5	106.8	125.2	103.7	127.5	104.8	155.9	144.7	128.1	110.3	249.2	242.7	249.3	241.7	155.2	137.7	246.8	240.1	250.2	247.0
September.	128.2	110.9	127.9	110.0	127.9	110.9	125.4	108.4	124.6	105.7	126.5	106.7	155.4	145.7	127.8	111.2	249.7	243.0	249.4	242.4	155.2	139.8	247.7	241.3	250.1	246.0
October....	128.6	112.3	128.3	111.7	127.9	112.4	126.2	110.0	126.0	107.4	155.4	147.5	128.1	113.1	249.3	242.2	249.1	242.8	154.5	139.8	248.2	242.6	250.0	246.5
November.	128.1	111.7	128.1	112.4	127.9	112.7	126.1	110.1	125.5	107.4	155.0	146.3	127.9	112.7	249.0	241.8	249.0	243.9	155.3	141.1	248.0	242.5	250.2	246.3
December.	128.3	113.2	127.7	111.9	127.6	112.7	125.9	110.8	125.4	108.3	153.7	147.0	128.1	113.5	249.5	243.2	249.0	243.0	149.6	139.3	247.6	242.4	250.0	247.1
Averages..	127.0	109.6	126.6	108.1	126.4	109.0	124.4	105.3	123.5	103.0	125.4	104.6	132.2	122.6	153.3	143.2	126.4	109.9	249.5	242.9	248.4	241.0	152.1	136.2	247.7	241.4	250.0	246.3

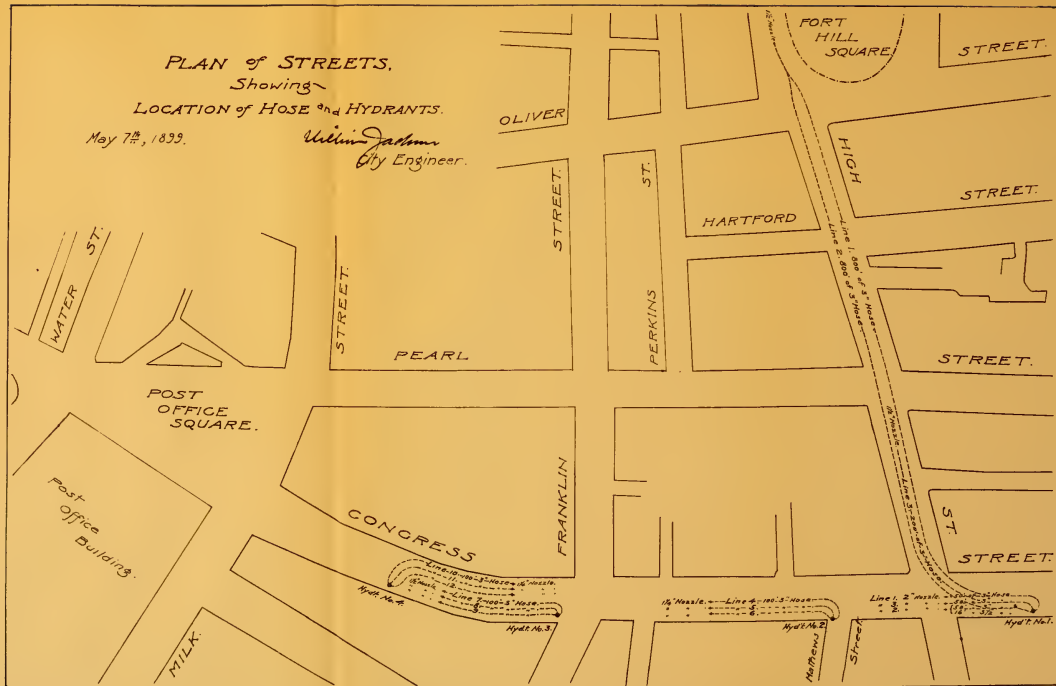
Monthly Rainfall in Inches During 1899 in Various Places in Eastern Massachusetts.

PLACE.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Framingham	4.19	4.79	7.05	1.73	1.38	2.48	3.16	1.59	3.78	2.61	2.12	1.71	36.59
Dam 4, Ashland	4.29	4.99	7.15	1.82	1.72	2.34	3.17	1.49	4.13	2.84	1.96	1.69	37.59
Cordaville	4.18	5.04	7.27	2.10	1.29	2.81	3.60	1.89	4.12	2.79	2.54	2.03	39.16
Lake Cochituate	4.36	4.44	7.31	1.70	1.06	2.79	3.20	2.17	4.65	3.05	2.31	1.92	38.96
Chestnut Hill Reservoir	4.51	5.01	7.05	1.47	0.91	2.73	3.70	3.51	5.38	3.05	2.59	1.75	41.96
Spot Pond	4.10	5.27	7.17	1.40	1.03	2.90	2.67	3.22	4.81	2.76	2.49	1.42	39.24
Gibson street, Dorchester	5.46	3.73	7.02	1.41	1.27	2.84	4.02	1.40	6.35	2.61	3.20	1.42	40.73
Cambridge Observatory	4.96	5.41	6.67	1.37	1.46	2.90	2.49	2.59	4.31	1.55	3.56	1.51	38.78
Waltham, Boston Manufacturing Company	4.57	4.20	7.28	1.58	1.05	3.48	2.76	2.69	4.72	2.77	2.35	2.09	39.54
Lowell, Locks and Canals Company	4.37	5.02	7.95	1.50	2.10	2.71	4.12	2.11	3.66	1.99	2.71	1.68	39.92
Average of above ten places	4.50	4.79	7.19	1.61	1.33	2.80	3.29	2.25	4.59	2.60	2.58	1.72	39.25

PLAN of STREETS,
Showing
LOCATION of HOSE and HYDRANTS.

May 7th, 1899.

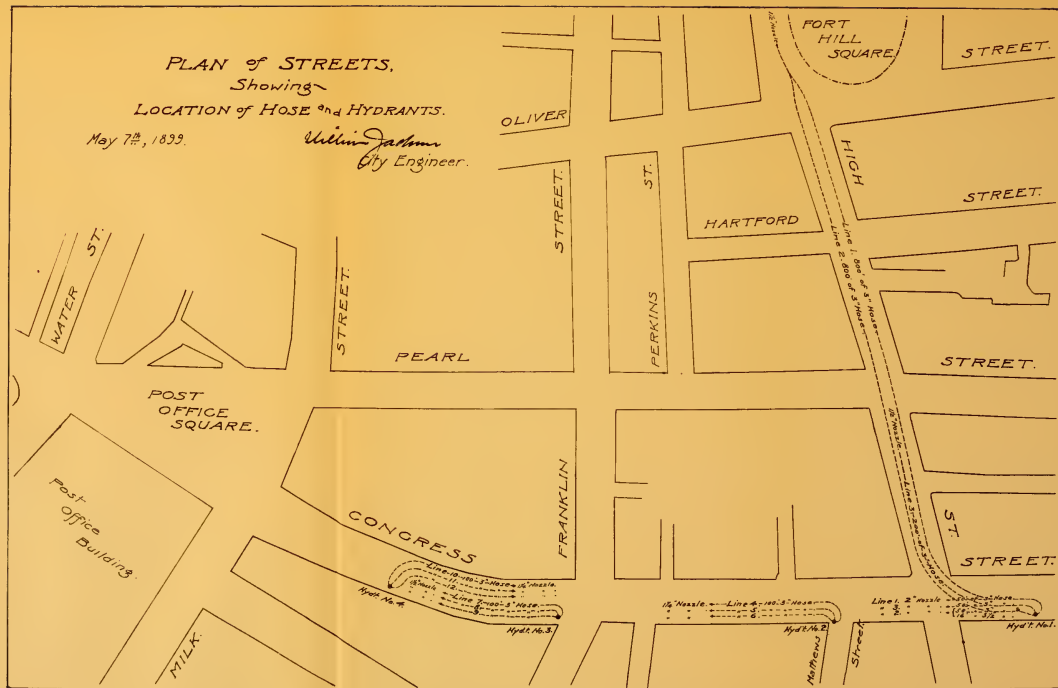
William Jackson
City Engineer.



PLAN OF STREETS,
Showing
LOCATION OF HOSE and HYDRANTS.

May 7th, 1899.

William Jackson
City Engineer.



[FROM THE CITY ENGINEER'S REPORT TO THE
STREET DEPARTMENT.]

In general, the construction of assessment streets and boulevards, and the laying of new street paving has been supervised, the repairs of asphalt pavement, not under guaranty, superintended, the grading of street railway tracks determined, numerous estimates for street improvements made, and many miscellaneous matters reported upon and attended to upon your request.

LENGTHS, AREAS, ETC., OF ACCEPTED STREETS.

The tables showing lengths and areas of paving on accepted streets have been brought up to February 1, 1900, and tables giving statistical details of the asphalt pavement in the city, and the cost of repairing the same have been prepared.

ASPHALT STREETS.

All repairs on asphalt streets that are paid for by the city have been supervised, and the patches measured for payment. The patches are carefully located in all cases, so that they may be identified, and where suitable plans are on file in this office they have been plotted. Trenches cut in asphalt roads by city departments or corporations are made under permit from the Permit Office, and the repairs are made by the company which originally put down the pavement, at the expense of the party making the opening. Asphalt streets laid under a maintenance guaranty for a term of years have been looked after, and the companies giving the guaranty have been notified when repairs were required. The cost of repairing asphalt has been 24.7 cents per square yard for the year. The recommendation is repeated that rates for doing this work, for a term of years, be made with the several companies.

A List of Streets Paved with Sheet Asphalt and having a Maintenance Guarantee, February 1, 1900.

TRINIDAD ASPHALT.

City Proper.

NAME.	Limits.	Base.	Length feet.	Length miles.	Area.	Guarantee expire.
Albany st.....	80 ft. north of Broadway across Way st.....	Concrete	105	.020	397	Aug. 17, 1904
Andrews st.....	E. Dedham st. to E. Canton st.....	Concrete	216	.041	312	Oct. 22, 1909
Batterymarch st.....	Milk st. to Liberty sq.....	Concrete	150	.028	466	Sept. 28, 1901
Beacon st.....	150 ft. from west curb line of Gloucester st. to 68 ft. beyond west line of Gloucester st., Hanson st. to Milford st.....	Concrete	218	.041	1,183	June 13, 1903
Bond st.....	Easterly side Berkeley st. across Claren- don st.....	Concrete	192	.036	426	July 1, 1900
Boylston st.....	Beacon st. to Pinckney st.....	Concrete	656	.124	3,869	Oct. 4, 1902
Brimmer st.....	Albany st. to 105 ft. west of Albany st.....	Concrete	1,087	.206	3,300	Aug. 31, 1900
Broadway	Castle sq. easterly	Concrete	105	.020	467	Nov. 11, 1904
Castle st.....	For 45 ft. from Columbus ave.....	Concrete	45	427	Aug. 27, 1904
Cazenove st.....	Brighton st. to Charles st.....	Concrete	272	.051	100	July 15, 1904
Chambers st.....	Easterly side Fruit st. across Allen st.....	Cob. & Conc.....	706	.134	604	July 1, 1900
Charles st.....	B. & A. R.R. bridge to Chandler st.....	Cob. & Conc.....	180	.034	1,804	Oct. 31, 1909
Columbus ave.....	Massachusetts ave. to 304 ft. south of Cam- den st.....	Cob. & Conc.....	903	.171	740	July 15, 1904
Columbus ave.....	Endicott st. to Charlestown st.....	Cob. & Conc.....	205	.039	5,418	Nov. 7, 1901
Cooper st.....	Washington st. to Shawmut ave.....	Cob. & Conc.....	338	.064	604	Sept. 27, 1902
Corning st.....	Buckingham st. to B. & A. R.R. bridge	Cob. & Conc.....	127	.024	734	May 25, 1901
Dartmouth st.....	Milk st. to Water st.....	Cob. & Conc.....	262	.050	580	May 16, 1904
Devonshire st.....	Essex st. to Beach st.....	Cob. & Conc.....	470	.089	786	Oct. 1, 1909
Edinboro' st.....	Cooper st. across Thacher st.....	Cob. & Conc.....	318	.060	924	Aug. 14, 1900
Endicott st.....	At Castle sq.....	Cob. & Conc.....	37	.007	1,078	Oct. 26, 1909
Ferdinand st.....					107	June 1, 1904

Harrison ave.	22 ft. south of Kneeland st. to 22 ft. north of Harvard st.	Cob. & Conc.	249	.047	885	Nov. 16, 1909
Harrison ave.	E. Newton st. to E. Springfield st.	Cob. & Conc.	928	.176	2,681	Aug. 14, 1900
Kilby st.	State st. to Milk st. including Liberty sq.	Cob. & Conc.	640	.121	4,059	Sept. 28, 1903
Laconia st.	Washington st. to Harrison ave.	Concrete	330	.063	727	June 18, 1901
LaGrange st.	Tremont st. toward Washington st.	Concrete	181	.034	355	Oct. 23, 1902
Lincoln pl.	Worcester st. to W. Springfield st.	Concrete	217	.041	313	Aug. 17, 1902
N. Margin st.	Stillman st. to Thacher st.	Concrete	515	.098	1,154	Sept. 10, 1900
Parkman st.	North Anderson st. across Blossom st.	Concrete	241	.046	550	Oct. 14, 1903
Pine st.	Charles st. across Brimmer st.	Concrete	271	.051	723	Aug. 31, 1900
Pine st.	Washington st. to Harrison ave.	Concrete	419	.079	597	June 18, 1901
Public Alley 401.	Between Irvington st. and Garrison st.	Concrete	350	.066	362	Oct. 2, 1909
" 402.	Between Garrison st. and W. Newton st.	Concrete	358	.068	374	Sept. 30, 1909
" 403.	Between W. Newton st. and Cumberland st.	Concrete	365	.067	370	Sept. 29, 1909
" 419.	Between Beacon and Marlborough st., Clarendon to Dartmouth st.	Concrete	575	.109	511	Sept. 28, 1909
" 431.	Between Commonwealth ave. and Newbury st. Hereford to 83 ft. west of Gloucester st.	Concrete	312	.059	277	Sept. 25, 1909
" 437.	Berkeley st. to Arlington st.	Concrete	631	.120	561	Dec. 10, 1908
" 701.	130 ft. east of Tremont st. to Shawmut ave.	Concrete	521	.099	611	Nov. 8, 1909
Spring st.	Poplar to Leverett st.	Cobble	447	.085	908	May 20, 1900
Stevens st.	Lincoln pl. toward Shawmut ave.	Concrete	16	.003	22	Aug. 17, 1902
Tileston st.	Salem st. to Unity st.	Concrete	163	.031	124	Aug. 14, 1900
Tremont st.	At Castle sq.	Concrete	60	.011	771	Aug. 27, 1904
Trinity pl.	St. James st. across Stuart st.	Concrete	398	.075	1,150	Sept. 18, 1909
Unity st.	Charter st. to Tileston st.	Concrete	330	.062	500	Oct. 6, 1902
Water st.	Liberty sq. to Broad st.	Concrete	252	.048	682	Oct. 10, 1901
Wiget st.	Salem st. to N. Margin st.	Concrete	259	.049	240	Sept. 25, 1902
Totals.	15,610	2.956	43,884	

Charlestown.

NAME.	Limits.	Base.	Length, feet.	Length, miles.	Area.	Guarantee expres.
Bunker Hill st.	At Tufts st.	Concrete	150	Nov. 3, 1902
Corey st.	124 ft. north of Moulton st. to Moulton st.	Concrete	124	.024	276	Nov. 3, 1902
Moulton st.	Easterly side Corey st. to Vine st.	Concrete	81	.015	243	Nov. 3, 1902
Moulton st.	Vine st. to Bunker Hill.	Concrete	130	.025	390	Nov. 3, 1902
Rutherford ave.	Devons st. 128 ft. westerly.	Concrete	128	.024	284	Nov. 5, 1902
Tufts st.	Bunker Hill st. 141 feet northerly.	Concrete	141	.027	415	Nov. 3, 1902
Vine st.	Bunker Hill across Moulton st.	Concrete	165	.031	670	Nov. 3, 1902
Totals	769	.146	2,428	

Roxbury.

Cabot st.	East side Vernon st. to Linden Park st.	Concrete	484	.091	1,390	Aug. 30, 1902
Columbus ave.	301 ft. south of Camden st. across Terry st.	Concrete	2,640	.500	15,840	Nov. 7, 1901
Public Alley 404.	66 ft. south of Cumberland st. to Public Alley 405.	Concrete	534	.101	533	Oct. 5, 1909
" 405.	94 ft. east of Huntington ave. to 62 ft. west of St. Botolph st.	Concrete	100	.019	89	Oct. 5, 1909
Totals	3,758	.711	17,852	

SICILIAN ROCK ASPHALT.
City Proper.

Acton st.....	Washington st. to Bradford st.....	Concrete	259	.049	352	Nov. 1, 1901
Albany st.....	Easterly side Stoughton, across East Con- cord st.....	Concrete	285	.054	1,710	Nov. 8, 1902
Avery st.....	Washington st. to Mason st.....	Concrete	360	.068	275	Oct. 18, 1902
Barton st.....	Leverett st. to Milton st.....	Concrete	427	.081	723	Aug. 14, 1900
Bradford st.....	Waltham st. to Shawmut ave.....	Concrete	600	.114	1,270	Sept. 11, 1902
Cobb st.....	Washington st. to Shawmut ave.....	Concrete	347	.066	1,041	Sept. 16, 1902
Exeter pl.....	Chauncey st. to Harrison ave.....	Concrete	170	.032	387	Oct. 20, 1902
Fabin st.....	Newland st. to Ivanhoe st.....	Concrete	421	.080	615	Sept. 10, 1900
Hamburg st.....	Mystic st. to Harrison ave.....	Concrete	383	.072	597	Oct. 1, 1901
Hanover st.....	Tileston st., across Charter st.....	Concrete	315	.060	934	May 14, 1901
Huntington ave.....	B. & A. R.R. bridge to Cumberland st.....	Concrete	1,591	.301	8,840	Oct. 12, 1901
Kingston st.....	Beach st. to Essex st.....	Concrete	492	.093	1,859	Aug. 9, 1909
Mayo st.....	Castle st. to Cobb st.....	Concrete	251	.047	418	Sept. 11, 1902
Meander st.....	E. Dedham st. to Malden st.....	Concrete	307	.058	437	Sept. 3, 1901
Mystic st.....	Malden st. to E. Dedham st.....	Concrete	204	.039	226	Oct. 20, 1901
Mystic st.....	E. Dedham st. to E. Canton st.....	Concrete	215	.041	335	Oct. 20, 1901
Mystic st.....	E. Canton st. to E. Brookline st.....	Concrete	216	.041	337	Oct. 20, 1901
North Margin st.....	Thacher st. toward Endicott st.....	Concrete	205	.039	518	Nov. 19, 1902
Norwich st.....	Mystic st. to Meander st.....	Concrete	221	.042	339	Sept. 24, 1901
Ohio st.....	Washington st. to Shawmut ave.....	Concrete	343	.065	277	July 30, 1901
Prince st.....	Hanover st. to Bennett ave.....	Concrete	293	.055	654	July 1, 1900
Shawmut av.....	132 ft. south of Castle st., across Cherry st.	Concrete	327	.062	945	Sept. 19, 1903
Taylor st.....	Dwight st. to Milford st.....	Concrete	196	.037	274	May 29, 1901
Whitmore st.....	Kneeland st. to Harvard st.....	Concrete	249	.047	445	Aug. 14, 1900
Total.....	8,677	1.643	23,808	

Charlestown.

Warren st.....	Winthrop st. to Soley st.....	Concrete	127	.024	365	Sept. 10, 1900
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South Boston.

NAME.	Limits.	Base.	Length, feet.	Length, miles.	Area.	Guarantee expires.
Athens st.	W. Second st. to A st.	617	.117	916	Oct. 9, 1900
East Broadway	Front of Lincoln School.	Concrete	180	.034	1,000	Oct. 7, 1902
K st.	E. Sixth st. to E. Eighth st.	Concrete	566	.107	1,083	May 20, 1901
West Broadway	N.Y., N.H., & H. R.R., Midland Div., bridge to E st. (4-ft. gutters).	Concrete	1,487	Oct. 5, 1902
West Broadway	150 ft. west of F st. to 267 ft. east of F street.	Concrete	448	.085	1,544	Oct. 28, 1902
West Broadway	267 ft. east of F st. to 44 ft. west of Dorches- ter st.	Concrete	410	.078	1,818	Dec. 15, 1903
Total	2,221	.421	7,848	

Roxbury.

Columbus ave.	Terry st. to 61 ft. north of Station st.	Concrete	884	.168	5,304	Oct. 23, 1901
Huntington ave.	Easterly side Cumberland st. to Massachu- setts ave.	Concrete	747	.141	4,150	Oct. 12, 1901
Huntington ave.	Massachusetts ave. to Gainsborough st.	Concrete	587	.111	3,372	Oct. 12, 1901
Total	2,218	.420	12,826	

Brighton.

Cottage Farm	Bridge over the B. & A. R.R., northerly roadway	Concrete	778	June 25, 1901
Cottage Farm	Southerly roadway.	Concrete	140	.027	778	Oct. 29, 1901
Total	140	.027	1,556	

SEYSSSEL ASPHALT.

Genesee st.....	Harrison ave. to Albany st.....	Concrete	505	.006	1,122	July 12, 1904
Mason st.....	444 ft. south of West st. to Avery st.....	Concrete	123	.023	265	Nov. 23, 1904
Milton st.....	Brighton st. to Spring st.....	Concrete	308	.058	274	Sept. 8, 1909
Oswego st.....	Harrison ave. to Albany st.....	Concrete	506	.096	1,068	July 22, 1904
Paul st.....	Emerald st. to Village st.....	Concrete	133	.025	236	Oct. 23, 1902
Paul st.....	Village st. to Tremont st.....	Concrete	276	.052	456	Oct. 23, 1902
Pelham st.....	Washington st. to Shawmut ave.....	Concrete	320	.061	693	Oct. 12, 1902
Public Alley 102.....	23 ft. south of Marshall st. to Creek sq.....	Concrete	182	.034	184	Nov. 11, 1909
" 702.....	Worcester st. to W. Springfield st.....	Concrete	222	.042	222	Nov. 9, 1909
" 703.....	Between Newland st. and Public Alley 702..	Concrete	116	.022	103	Nov. 9, 1909
Waterford st.....	Washington st. to Shawmut ave.....	Concrete	316	.060	544	Nov. 13, 1902
Total.....	3,007	.569	5,167	

ASPHALTINA.

Hayward pl.....	Washington st. to Harrison ave.....	Concrete	260	.049	578	Nov. 7, 1903
Massachusetts ave.....	Columbus ave. to Tremont st., northerly roadway.....	Concrete	267	.051	1,622	Oct. 11, 1902
Total.....	527	.100	2,200	

SUMMARY.

Trinidad asphalt.....	20,137 feet, or 3.813 miles, or 64,164 square yards
Sicilian rock asphalt.....	13,256 " " 2.511 " " 46,038 " "
Seyssel rock asphalt.....	3,007 " " 0.569 " " 5,167 " "
Asphaltina.....	527 " " 0.100 " " 2,200 " "
Total sheet asphalt under maintenance guarantee, February 1, 1900.....	36,927 feet, or 6.993 miles, or 117,569 square yards.	

Cost of Asphalt Patching, 1899.

Work done by Barber Asphalt Paving Company.

TRINIDAD ASPHALT.

NAME.	Year laid.	Base.	Length miles.	Total yards in street.	Yards resurfaced.	Cost of patching.	Cost per square yard of surface.
Liberty sq., part east of Kilby st.	1881	Concrete.	505	1.42	\$3 55	\$.007
Court sq., westerly side.	1881	Concrete. . .	.064	950	60.91	152 27	.160
Doane st., Kilby st. to Broad st.	1881	Concrete. . .	.059	624	37.52	93 80	.150
Congress sq. intersection.	1883	Concrete. . .	.004	37	17.68	44 20	1.194
N. Bennett st., Hanover st. to Salem st.	1883	Cobble. . .	.105	920	244.10	610 25	.663
Albany st., E. Concord st. toward Massachusetts ave.	1884	Concrete. . .	.085	2,700	417.38	1,043 48	.387
Endicott st., Cooper st. across Thacher st.	1884	Cobble.	Resurfa	ced	Concrete	base, 1899
Ash st., Bennett st. to Nassau st.	1887	Concrete. . .	.044	427	40.08	100 20	.235
Bennett st., Washington st. and Harrison ave.	1887	Concrete. . .	.034	350	9.12	22 80	.065
Central st., Kilby st. to Broad st.	1887	Concrete. . .	.059	869	98.55	246 37	.283
Cooper st., N. Margin st. across Endicott st.	1887	Concrete. . .	.037	597	135.99	339 98	.569
Exchange pl., Congress st. to Kilby st.	1887	Concrete. . .	.046	678	52.70	131 75	.194
Poplar st., Spring st. to Charles st.	1887	Cobble. . .	.109	1,192	161.80	404 50	.339
Tileston st., 155 ft. west of Hanover st. across							
Unity st.	1887	Cobble. . .	.048	346	122.59	306 47	.886
Wiggin st., Tileston st. to N. Bennett st.	1887	Cobble. . .	.020	119	35.54	88 85	.747
W. Sixth st., between C st. and D st.	1887	Concrete. . .	.017	305	58.74	146 85	.481
Brattle sq., Brattle st. to Elm st.	1888	Concrete. . .	.053	670	16.29	40 73	.061
D st., Fifth st. to Gold st.	1889	Concrete. . .	.024	448	14.66	36 65	.082
Water st., Congress st. to Kilby st.	1889	Concrete. . .	.048	694	113.54	283 85	.409
Anstin st., Charlestown, Seminary pl. to Lawrence st.	1891	Concrete. . .	.027	421	33.55	83 87	.199
Beacon st., Charles st. across Arlington st.	1891	Concrete. . .	.165	3,800	264.95	662 38	.174
Cabot st., Tremont st. to Ruggles st.	1891	Concrete. . .	.234	3,571	444.12	1,110 30	.311
Court st., Washington st. to Court sq.	1891	Concrete. . .	.044	642	28.97	72 42	.112
Hollis st., Tremont st. to Washington st.	1891	Block. . .	.052	521	36.49	91 23	.175
Hudson st., Beach st. 90 ft. north of Curve st.	1891	Concrete. . .	.266	3,938	279.53	698 82	.178

Moon st., North sq. to Lewis st.....	1891	Cobble034	384	29.88	74 70	.194
Rogers st., Dorehester st. to Preble st.....	1891	Cobble068	480	10.26	25 65	.053
Sun Court st., Moon st. to North st.....	1891	Cobble029	218	41.68	104 20	.478
Warrenton st.....	1891	Cobble and Concrete..	.216	2,497	348.69	871 73	.349
Beacon st., Dartmouth st. to within 150 ft. of Gloucester st.....	1892	Cobble and Concrete..	.330	9,277	483.22	1,208 05	.130
Brighton st., Leverett st. to Allen st.....	1892	Cobble160	1,737	467.96	1,169 90	.674
Cherry st., Washington st. to Shawmut ave.....	1892	Concrete..	.063	594			
Clark st., Hanover st. to North st.....	1892	Cobble060	614	42.63	106 57	.174
Davis st., Washington st. to Harrison ave.....	1892	Concrete..	.061	646			
Groton st., Washington st. to Shawmut ave.....	1892063	558	1.00	2 50	.004
Hanover ave., Hanover st. to North st.....	1892	Cobble058	266	23.67	64 17	.241
Malcolm st., Mt. Vernon st. to Chestnut st.....	1892049	290	22.48	56 20	.194
Massachusetts ave., Columbus ave. to Washington st. (southerly roadway)	1892	Concrete..	.174	5,549	587.77	1,409 43	.265
Poplar st., Chambers st. across Spring st.....	1892	Cobble115	1,250	52.72	131 80	.105
Stillman st., Endicott st. across North Margin st....	1892	Cobble032	453	12.85	32 12	.071
Stoddard st., Howard st. to Court st.....	1892	Cobble026	150			
Thacher st., Charlestown to Endicott st.....	1892	Concrete..	.038	562	* 131.51	290 58	.517
Cabot st., easterly side of Ruggles st. to Vernon st....	1892	Concrete..	.137	2,988	21.59	53 97	.018
E st., W. Third st. to Bolton st.....	1892	Concrete..	.021	410	8.29	20 73	.051
W. Third st., west of E st. across E st.....	1892	Concrete..	.035	769			
Columbus ave., B. & A. R.R. to Massachusetts ave..	1892	Concrete..	.663	15,000	2,579.51	6,448 78	.430
Harrison ave.....	1892	Concrete..	.144	995	104.16	260 40	.262
Arch st., Franklin st. to Milk st.....	1893	Concrete..	.081	1,267	2.83	7 08	.006
Beacon st., 68 ft. south of Gloucester st. to Massa- chusetts ave.....	1893	Concrete..	.193	5,391	62.06	155 15	.029
Parmenter st., Hanover st. to Salem st.....	1893	Concrete..	.053	764	14.55	36 37	.048
			4.547	78,433	7,777.54	\$19,405 65	

* Part surface heater work.

Average cost, \$0.247.

Prices paid for entire renewal, \$2.50 per square yard.
Prices paid for surfacing patches, \$2 per square yard.

Work done by the Boston Asphalt Company.

SICILIAN ROCK.

NAME.	Year laid.	Base.	Length miles.	Total yards in street.	Yards resurfaced.	Cost of patching.	Cost per square yard of surface.
Athens st., B st. to C st.....	1892	Concrete...	.098	746			
W. Broadway, between Dorchester ave. and A st...	1892	Concrete...	.068	2,000	136.13	\$340 32	.170
Decatur st., Washington st. to Harrison ave.	1892	Concrete...	.070	781	22.03	55 08	.071
Motte st., Washington st. to Harrison ave.....	1892	Concrete...	.063	516			
Broadway, Gardner pl. 150 ft. easterly.....	1893	Concrete...	.028	648	24.36	60 90	.094
Dwight st., Shawmut ave. to Tremont st.....	1893	Concrete...	.136	2,075	7.59	18 97	.009
			.463	6,766	190.11	\$475 27	

Price paid entire renewal, \$2.50 per square yard. Average cost, \$0.670 per square yard.

Work done by Simpson Bros. Corporation.

TAR CONCRETE.

NAME.	Year laid.	Base.	Length miles.	Total yards in street.	Yards resurfaced.	Cost of patching.	Cost per square yard of surface.
Harris st., Hanover st. to North st.....	Cobble056	425	72.83	\$109 25	\$0.257

Price paid, \$1.50 per square yard.

Measurements have also been made on asphalt patching ordered by the Street Department, required by resetting edgestones for artificial stone sidewalks, resetting crosswalks, etc., which are not included in these tables.

Comparative Cost, for the Year 1899, of Patching Asphalt Pavements, having no Maintenance Guarantee.

TRINIDAD ASPHALT.

PAVEMENT LAID.	Area square yards.	Cost.	Average cost per yard.
1881	2,079	\$249 62	\$0.1200
1883	957	654 45	.6839
1884	2,700	1,043 48	.3864
1887	4,883	1,787 77	.3661
1888 *.....	1,665	301 13	.1808
1889	1,142	320 50	.2806
1891 †.....	16,472	3,795 30	.2304
1892	26,113	4,606 02	.1764
1893	7,422	198 60	.0263

* Not including Columbus avenue.

† Harrison avenue, part of which has been resurfaced, included in 1888.

SICILIAN ROCK ASPHALT.

PAVEMENT LAID.	Area square yards.	Cost.	Average cost per yard.
1892	4,043	\$395 40	\$0.0979
1893	2,723	79 87	.0293

PAVING.

Street paving has been supervised in all cases where requested.

Granite block pavement on a concrete base, laid with pitch and pebble joints, 30,883 square yards.

Granite block pavement on a gravel base, laid with pitch and pebble joints, 963 square yards.

Granite block pavement on a gravel base, laid with gravel joints, 14,794 square yards.

Trinidad lake asphalt, with a binder course of asphaltic cement concrete, on an American cement concrete base, 4,041 square yards, at an average cost of about \$3.00 per square yard for five years guaranty and \$3.25 per square yard for ten years guaranty, exclusive of cost of preparing road-bed for the concrete base.

Trinidad lake asphalt, with a binder course of asphaltic cement concrete, on an American *Portland* cement concrete base, 2,595 square yards, 1,843 square yards in Charles street from Fruit street across Allen street, costing \$3.25 per square yard, and 752 square yards in Devonshire street, between Milk and Water streets, costing \$3.65 per square yard for ten years guaranty, exclusive of cost of preparing road-bed for the concrete base.

Trinidad *land* asphalt, with a binder course of asphaltic cement

concrete, on an American cement concrete base, 2,500 square yards. This asphalt was laid on Public Alleys numbered 401 to 405 inclusive, 419 and 431, the cost per square yard cannot be definitely stated, as the price paid was a lump sum, which included the cost of considerable other work, exclusive of the cost of preparing the road-bed for the concrete base.

Sicilian rock asphalt, on an American cement concrete base, 1,817 square yards, at an average cost of about \$3.00 for five years' guaranty, and \$3.25 for ten years' guaranty, exclusive of the cost of preparing the road-bed for the concrete base.

Seyssel rock asphalt, on an American cement concrete base, 3,221 square yards, at an average cost of about \$3.00 for five years guaranty, and \$3.25 for ten years guaranty, exclusive of the cost of preparing the road-bed for the concrete base.

All asphalt pavement laid during season of 1899, was laid with a maintenance guaranty for *ten* (10) years, except that on Genesee, Mason and Oswego streets the guaranty is for five years.

Edgestones set, 93,325 linear feet; gutter paving laid, 30,527 square yards; brick sidewalks laid, 26,163 square yards; crushed stone sidewalks constructed, 38,860 square yards; artificial stone sidewalks, 80,972 square feet; flagging crosswalks laid, 5,033 square yards; macadam surface (6 inches), 83,933 square yards; Telford base (8 inches), macadam (4 inches), 29,456 square yards.

Endicott street, from Cooper street across Thacher street, was paved with $1\frac{1}{2}$ inches of Trinidad lake asphalt, with $1\frac{1}{2}$ inches of bituminous concrete binder on a 6-inch American cement concrete base, by the Barber Asphalt Paving Company. The old pavement was removed and roadway excavated by the Street Department. The edgestones were reset, flagging crosswalks and brick sidewalks relaid by Patrick McGovern. Former payment was asphalt on cobblestones.

Mason street, from 450 feet west of West street to about 120 feet westerly, was paved with $2\frac{1}{2}$ inches of Seyssel natural rock asphalt, on a 6-inch American cement concrete base, by Jones & Meehan. The old pavement was removed and roadway excavated by the Street Department; edgestones were reset and brick sidewalks relaid by Jones & Meehan. Former pavement was old granite blocks.

Park street, from Tremont street to Beacon street, was repaved and newly macadamized, the sidewalk on the Common side of the street was removed, the edgestones on that side being set one foot from the bases of the iron fence to form a wheel guard; on the other side of the street the sidewalk was widened about two feet, making it twelve feet wide, by this means the roadway was also widened about six feet. The roadway was graded and macadamized, edgestones reset, granite block paving, flagging crosswalks and brick sidewalks relaid by W. H. Glenn & Co. Three new catch-basins were built, one was rebuilt, and three were abandoned and sealed up. Former pavement was old granite blocks and macadam.

The following streets were repaved under appropriations made by the Board of Apportionment:

Atlantic avenue (including the tracks of the Boston Elevated Railway Company and Union Freight Railroad), from Dewey square to Oliver street, was paved with large granite blocks on a 6-inch American cement concrete base with pitch and pebble joints. The old pavement was removed and roadway excavated by the Street Department, concrete base laid by The Metropolitan Contracting Company. In the portion from Dewey square across Congress street the roadway paving was laid, edgestones set, brick sidewalks and flagging crosswalks laid by Jones & Meehan; in the portion from Congress street to Oliver street similar work was done by Patrick McGovern. The Boston Elevated Railway Company and Union Freight Railroad, by agreement, paid for the portions within their tracks. Former pavement was old granite blocks on gravel bed with gravel joints. One new catch-basin was built.

Blackstone street, from Hanover street across North street, was paved with large granite blocks on a 6-inch American cement concrete base with pitch and pebble joints. The old pavement was removed and roadway excavated by the Street Department; concrete base was laid by the Metropolitan Contracting Company. Roadway paving was laid, edgestones set, brick sidewalks and flagging crosswalks laid by Patrick McGovern & Co. Former pavement was old granite blocks on gravel bed with gravel joints.

Charles street, from Fruit street across Allen street, exclusive of the tracks of the Boston Elevated Railway Company, was paved with $1\frac{1}{2}$ inches of Trinidad lake asphalt with $1\frac{1}{2}$ inches of bituminous concrete binder on a 6-inch American Portland cement concrete base, by the Barber Asphalt Paving Company. The old pavement was removed, roadway excavated, edgestones set, flagging crosswalks and brick sidewalks laid by the Street Department. Former pavement was large granite blocks on gravel bed, with pitch and pebble joints.

Congress street, from Atlantic avenue to the old sea-wall, was paved with Philadelphia size granite blocks, on a 6-inch American cement concrete base, with pitch and pebble joints. The old pavement was removed and roadway excavated by the Street Department; concrete base, roadway paving, flagging crosswalks, and brick sidewalks were laid, and edgestones set by Jones & Meehan. Two catch-basins were rebuilt, and four abandoned ones sealed up. Former pavement was old granite blocks on gravel bed with gravel joints.

Devonshire street, from Milk street to Water street, was paved with 2 inches of Trinidad lake asphalt, with $1\frac{1}{2}$ inches of bituminous concrete binder on an American Portland cement concrete base of varying thickness, by the Barber Asphalt Paving Company. The old block pavement was removed and former concrete base cleaned by the Street Department. Upon this existing concrete base was deposited sufficient new concrete to bring the base to the proper grade and crown for the new pave-

ment; several corporation trenches were found from which the former base had been removed and not replaced. These trenches were excavated to a depth of six inches below the top of old concrete and filled with the new concrete. Flagging crosswalks and brick sidewalks were laid and edgestones reset by the Street Department. Former pavement was granite blocks on a concrete base.

Federal street, from Dewey square to Milk street, including the tracks of the Boston Elevated Railway Company, was paved with large granite blocks on a 6-inch American cement concrete base, with pitch and pebble joints. The old pavement was removed and roadway excavated by the Street Department; concrete base, roadway paving, flagging crosswalks, brick sidewalks, were laid and edgestones set by Patrick McGovern. The Boston Elevated Railway Company, by agreement, paid for the portion within its tracks. Former pavement was old granite blocks on a gravel bed with gravel joints.

Genesee street, from Harrison avenue to Albany street, was paved with $2\frac{1}{2}$ inches of Seyssel natural rock asphalt, on a 6-inch American cement concrete base, by Jones & Meehan. The old pavement was removed and roadway excavated by the Street Department; edgestones were reset, granite block paving and brick sidewalks relaid by Jones & Meehan. Two square granite catch-basin frames were removed and cast-iron D frames substituted. Former pavement was fire bricks on a gravel bed, laid in 1891.

Harrison avenue, from about 20 feet south of Kneeland street, to about 20 feet north of Harvard street, including the tracks of the Boston Elevated Railway Company, was paved with $1\frac{1}{2}$ inches of Trinidad lake asphalt with $1\frac{1}{2}$ inches of bituminous concrete binder, on a 6-inch American cement concrete base, by the Barber Asphalt Paving Company. The 20 feet at Kneeland and at Harvard streets was paved with large granite blocks on a 6-inch American cement concrete base with pitch and pebble joints, by Patrick McGovern, except that the Barber Asphalt Paving Company laid the concrete base; from north side of Harvard street to north side of Bennet street the roadway was paved with large granite blocks on gravel bed with gravel joints, except that in front of the Fire Department ladder-house about 127 square yards of paving was laid with pitch and pebble joints, by Patrick McGovern. The old pavement was removed and roadway excavated by the Street Department; edgestones were set, flagging crosswalks and brick sidewalks laid by Patrick McGovern. Six square granite catch-basin frames were removed and cast-iron D frames substituted. The Boston Elevated Railway Company, by agreement, paid for the portion within its tracks. By changing the line of edgestones the roadway was widened about 1.5 feet, it now being 32 feet between the edgestones. Former pavement was old granite blocks on gravel bed with gravel joints.

Kingston street, from Essex street to Beach street, was paved with 2 inches of Sicilian rock asphalt on a 6-inch American cement concrete base, by the Boston Asphalt Company. From Bedford street across Essex street, including the tracks of the Boston Elevated Railway Company, was paved with Philadelphia size granite blocks on a 6-inch American cement concrete base, with pitch and pebble joints, by H. Gore & Co. The old pavement was removed and roadway excavated by the Street Department, edgestones were set, flagging crosswalks and brick sidewalks laid by H. Gore & Co. Former pavement was old granite blocks on a gravel bed with gravel joints.

Leverett street, from Craigie's bridge to Causeway street, including the tracks of the Boston Elevated Railway Company, roadway paved with large granite blocks on gravel bed with gravel joints, tracks paved with Philadelphia size granite blocks on gravel bed with gravel joints. The old pavement was removed and roadway excavated by the Street Department; granite block paving was laid, edgestones set, flagging crosswalks and brick sidewalks laid by Jones & Meehan. Former pavement was old granite blocks on gravel bed, with gravel joints. The Boston Elevated Railway Company, by agreement, paid for the portion within its tracks.

Milton street, from Brighton street to Spring street, was paved with 2 inches of Seyssel, natural rock, asphalt on a 6-inch American cement concrete base, by Jones & Meehan. The old pavement was removed and roadway excavated by the Street Department; edgestones were set and brick sidewalks laid by Jones & Meehan. By changing the line of edgestones the roadway was widened about 1 foot, it now being 8 feet between the edgestones. Former pavement was old cobble stones.

Oswego street, from Harrison avenue to Albany street, was paved with $2\frac{1}{2}$ inches of Seyssel, natural rock asphalt, on a 6-inch American cement concrete base, by Jones & Meehan. The old pavement was removed and roadway excavated by the Street Department; edgestones were reset, granite block paving and brick sidewalks relaid by Jones & Meehan. Former pavement was of red bricks laid in 1891.

ASSESSMENT STREETS.

The following streets were constructed under chapter 323 of the Acts of 1891, and acts in amendment thereof or in addition thereto.

The cost of the work herein given is the cost of the work done, and materials furnished, by the contractor, and does not include the cost of materials furnished by the city.

Albany street, northwesterly corner at Northampton street, was widened by taking 137 square feet of land from the corner estate. The contract for doing the necessary work in connection with this widening was awarded to H. Gore & Co. Work under this contract was begun October 16, 1899, and completed Novem-

ber 22, 1899, at a cost of \$149.92. The work consisted of repaving roadway with granite blocks, setting new edgestones, and paving brick sidewalks.

Alexander street; Alexander street southerly is about 611 feet long. The contract for constructing the surface of this street was awarded to James McGovern. Work under this contract was begun October 25, 1899, and suspended November 25, 1899.

Amory street, School street to Bragdon street, is about 725 feet long. The contract for constructing the surface of this street was awarded to Patrick McGovern. Work under this contract was begun May 1, 1899, and completed December 21, 1899, at a cost of \$2,210.36. It is a 6-inch macadam road with crushed stone sidewalks. Crushed stone, gutter blocks and straight edgestones were furnished by the city and hauled to the site of the work by the contractor. Circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

Andrews street, East Canton street to East Dedham street, is about 216 feet long. The contract for constructing the surface of this street was awarded to the Barber Asphalt Paving Company. Work under this contract was begun September 26, 1899, and completed October 22, 1899, at a cost of \$1,077.55. It is an asphalt road with brick sidewalks. The roadway is paved with $1\frac{1}{2}$ inches of Trinidad lake asphalt, with $1\frac{1}{2}$ inches of bituminous concrete binder on a 6-inch American cement concrete base. New edgestones and flagging for crosswalks were furnished by the city and hauled to the site of the work by the contractor; new bricks and gutter blocks were furnished on the work by the city.

Angell street, Blue Hill avenue to Canterbury street, is about 877 feet long. The contract for constructing the surface of this street was awarded to James Doherty & Co., November 2, 1898. Work under this contract was begun April 17, 1899, and completed June 10, 1899, at a cost of \$2,316.11. It is a 6-inch macadam road with brick sidewalks. Crushed stone, gutter blocks and edgestones were furnished by the city and hauled to the site of the work by the contractor; bricks for sidewalks were furnished, on the work, by the city; flagging for crosswalks was furnished by the contractor.

Annabel street, Columbia road to Sumner street, is about 429 feet long. The contract for constructing the surface of this street was awarded to James McGovern. Work under this contract was begun November 14, 1899, and suspended December 21, 1899, only the rough grading being done.

Ashley street, Breed street to Walley street, is about 641 feet long. A contract for filling this street to sub-grade was made with H. & D. Burnett on November 20, 1899, at the rate of 44 cents per cubic yard, measured in place. Work under this contract was begun December 4, 1899, and is not yet completed.

Aster street, Massachusetts avenue to Hemenway street, is about 890 feet long. The contract for constructing this street was awarded to Patrick McGovern, November 5, 1898. Work under this contract was begun May 26, 1899, and completed August 18, 1899, at a cost of \$2,220.02. It is a 6-inch macadam road with crushed stone sidewalks. Crushed stone, gutter blocks and straight edgestones were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished, on the work, by the city. Flagging for crosswalks was furnished by the contractor.

Atheiworld street, at School street, was widened by taking 789 square feet of land from the corner estates. The contract for doing the necessary work in connection with this widening was awarded to Collins & Ham. Work under this contract was begun July 5, 1899, and completed July 17, 1899, at a cost of \$150. The work done was to build a 6-inch macadam roadway and crushed stone sidewalk, set edgestones and pave granite block gutters. All stock required was furnished by the city and hauled to the site of the work by the contractor, except that the city furnished the circular edgestones on the work.

Atherstone street, Fuller street to Bailey street, is about 314 feet long. The contract for constructing the surface of this street was awarded to Philip Doherty. Work under this contract was begun August 19, 1899, and completed October 26, 1899, at a cost of \$701.94. It is a 6-inch macadam road with artificial stone sidewalks (3.5 feet wide and loam space about 2 feet wide. Cost of sidewalks not included in above cost). Crushed stone, gutter blocks and straight edgestones were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor. Artificial stone sidewalks were built at Numbers 1 and 5 by H. Johnson & Co., and at Number 10 by Patrick Lyons. On the remainder of the street the sidewalks had been previously constructed.

Belvidere street, West Newton street to Dalton street, is about 507 feet long. A contract for filling this street to subgrade was awarded to William Gilligan, at the rate of 40 cents per cubic yard in place. Work under this contract was begun January 25, 1899, and completed May 9, 1899, 1,535 cubic yards of filling being deposited, costing \$614.

Another contract for building wooden bulkhead and fence was awarded to Wm. H. Ryan & Co. Work under this contract was begun April 4, 1899, and completed April 29, 1899, at a total cost of \$538.40. The contract for constructing the surface of this street was awarded to Collins & Ham. Work under this contract was begun May 24, 1899, and completed July 11, 1899, at a cost of \$1,619.59. It is a 6-inch macadam road with brick sidewalks. Crushed stone, gutter blocks and straight edgestones were furnished by the city and hauled to the site of the work by

the contractor; circular edgestones and bricks for sidewalks were furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

Bennington street, Chelsea street to Belle Isle inlet, is about 10,621 feet long. A contract for depositing about 82,000 cubic yards of filling in this street was awarded to Jones & Meehan, November 20, 1899, at the rate of 53 cents per cubic yard measured in place. Work under this contract was begun January 16, 1900, and is being carried on at the present time.

Blandford street, Commonwealth avenue to the Boston and Albany Railroad, is about 399 feet long. A contract for depositing about 15,000 cubic yards of filling in this street was awarded to the Boston and Albany Railroad Co., December 27, 1899, at the rate of 45 cents per cubic yard measured in the bank. Work under this contract was begun January 3, 1900, and is still in progress.

Bragdon street, Columbus avenue to Amory street, is about 622 feet long. A contract for constructing the surface of this street was awarded to Thomas A. Dolan. Work under this contract was begun September 28, 1899, and completed October 14, 1899, at a cost of \$1,052.22. It is a 6-inch macadam road with crushed stone sidewalks. Crushed stone, edgestones, and gutter blocks were furnished by the city and hauled to the site of the work by the contractor. Flagging for crosswalks was furnished by the contractor.

Burt street, Washington street to Ashmont street, is about 1,365 feet long. The contract for constructing the surface of this street was awarded to Collins & Ham. Work under this contract was begun August 17, 1898, and completed May 22, 1899, at a cost of \$3,831.24. It is a 6-inch macadam road with brick sidewalks. Crushed stone, straight edgestones, and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones and bricks were furnished, on the street, by the city; flagging for crosswalks was furnished by the contractor.

Cambridge street, Brighton avenue to Washington street, is about 3,642 feet long. The contract for constructing the surface of this street was awarded to J. L. Bryne & Co. Work under this contract was begun October 26, 1899, and suspended December 23, 1899.

Canal street, Haymarket square to Causeway street, is about 1,097 feet long. The contract for paving and regulating this street, including the tracks of the Boston Elevated Railway Company, was awarded to Jones & Meehan. Work under this contract was begun October 15, 1898, and completed May 15, 1899, at a cost of \$11,588.95, not including cost of granolithic sidewalks. This street was widened on the northeasterly side about twenty-five feet, making it 75 feet wide between street lines. It was constructed in the following manner: Northeasterly, sidewalks 10 feet wide, paved with brick; roadway 50 feet wide,

paved with large granite blocks on a 6-inch American cement concrete base, with pitch and pebble joints; southwesterly sidewalks 15 feet wide, paved with artificial stone, sidewalks with granite edgestones. Straight edgestones, granite paving blocks and flagging for crosswalks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones and bricks for sidewalks were furnished on the work by the city.

The artificial stone sidewalk from Haymarket square to Market street, 2,946.75 square feet, was laid by W. A. Murtfeldt Company, at a cost of \$589.35; from Market street to Causeway street, 10,943.78 square feet, by Simpson Brothers Corporation, at a cost of \$2,188.76.

The Boston Elevated Railway Company, by agreement, paid for the portion of the work within its tracks.

Charlestown street, Haymarket square to Causeway street, is about 1,056 feet long. The contract for paving and regulating this street, including the tracks of the Boston Elevated Railway Company, was awarded to the Metropolitan Contracting Company. Work under this contract was begun July 31, 1899, and completed November 23, 1899, at a cost of \$16,883.78. This street was widened on the westerly side about 42 feet, making it 92 feet wide between street lines. It was constructed in the following manner: Two sidewalks, each 12 feet wide, paved with bricks; roadway 68 feet wide, paved with large granite blocks on a 6-inch American cement concrete base with pitch and pebble joints; brick sidewalks with granite edgestones. Straight edgestones, granite paving blocks and flagging for crosswalks were furnished by the city, and hauled to the site of the work by the contractor. Circular edgestones and bricks for sidewalks were furnished on the work by the city. The Boston Elevated Railway Company, by agreement, paid for the portion of the work within its tracks.

Chester street, Brighton avenue to Commonwealth avenue, is about 650 feet long. The contract for constructing the surface of this street was awarded to James Doherty & Co. Work under this contract was begun June 1, 1899, and completed August 3, 1899, at a cost of \$1,158.62, not including the artificial stone sidewalk on easterly side. It is a 6-inch macadam road, with crushed stone sidewalks on the westerly side. Crushed stone, straight edgestones, and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor. The artificial stone sidewalk (easterly side) was laid by J. C. Newborg.

Chiswick road, Chestnut Hill avenue to Englewood avenue, is about 2,046 feet long. The contract for constructing the surface of this street was awarded to Collins & Ham. Work under this contract was begun September 10, 1899, and suspended December 28, 1899.

Congreve street, South street to Centre street, is about 1,409

feet long. The contract for constructing the surface of this street was awarded to William Finneran. Work under this contract was begun November 4, 1899, and suspended January 1, 1900.

Cummington street, Blandford street to Avon street, is about 1,186 feet long. A contract for depositing about 54,000 cubic yards of filling in this street was awarded to the Boston & Albany Railroad Company, December 27, 1899, at the rate of 45 cents per cubic yard measured in the bank. Work under this contract was begun January 3, 1900, and is still in progress.

Devon street, Blue Hill avenue to Columbia road, is about 1,860 feet long. The contract for constructing the surface of this street was awarded to John Connors. Work under this contract was begun June 12, 1899, and completed September 8, 1899, at a cost of \$3,774.79, not including cost of artificial stone sidewalks. It is a 6-inch macadam road with artificial stone sidewalks. Crushed stone, straight edgestones and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor. The artificial stone sidewalks were laid by Patrick Lyons at a cost of \$4,161.80.

Edwin street, Dorchester avenue to Florida street, is about 1,188 feet long. The contract for constructing the surface of this street was awarded to Philip Doherty. Work under this contract was begun September 28, 1899, and completed December 8, 1899, at a cost of \$1,801.35, not including cost of artificial stone sidewalks. It is a 6-inch macadam road with artificial stone sidewalks. Crushed stone, straight edgestones and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor. A contract for laying the artificial stone sidewalks was awarded to Patrick Lyons. Work under this contract was begun October 30, 1899, and suspended November 24, 1899.

Florida street, King street to Templeton street, is about 1,133 feet long. The contract for constructing the surface of this street was awarded to Philip Doherty. Work under this contract was begun October 30, 1899, and suspended December 27, 1899.

Fowler street, Greenwood street to Glenway street, is about 874 feet long. The contract for constructing the surface of this street was awarded to Collins & Ham, November 2, 1898. Work under this contract was begun April 24, 1899, and completed June 5, 1899, at a cost of \$1,410.38, not including the cost of artificial stone sidewalks. It is a 6-inch macadam road with artificial stone sidewalks 4.5 feet wide and loam spaces 2 feet wide, bounded by granite edgestones. Crushed stone, straight edgestones and gutter blocks, were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was

furnished by the contractor. A contract for laying artificial stone sidewalks was awarded to Barnes-Ruffin Company. Work under this contract was begun June 12, 1899, and completed July 27, 1899, at a cost of \$1,613.

Francis street, Huntington avenue to Brookline avenue, is about 1,455 feet long. The contract for constructing the surface of this street was awarded to James Doherty & Co., November 5, 1898. Work under this contract was begun May 1, 1899, and completed June 28, 1899, at a cost of \$3,601.33. It is a 6-inch macadam road with crushed stone sidewalks. Crushed stone, straight edgestones, and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

Hamilton street, Bowdoin street to Homes avenue, is about 944 feet long. The contract for constructing the surface of this street was awarded to James McGovern. Work under this contract was begun October 26, 1898, and completed June 15, 1899, at a cost of \$1,869.64. It is a 6-inch macadam road with crushed stone sidewalks. Crushed stone, straight edgestones and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

Harold street, Munroe street to Walnut avenue, is about 748 feet long. A contract for constructing the surface of this street was awarded to Patrick McGovern. Work under this contract was begun November 21, 1898, and completed June 15, 1899, at a cost of \$1,628.10. It is a 6-inch macadam road with crushed stone sidewalks. Crushed stone, straight edgestones, and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor. A retaining wall and fence was built in front of Harriet V. Sanderson estate by Patrick McGovern, costing \$360.

Hewins street, Columbia road to Erie street, is about 701 feet long. A contract for constructing the surface of this street was awarded to Philip Doherty. Work under this contract was begun September 13, 1898, and completed May 17, 1899, at a cost of \$1,432.05. It is a 6-inch macadam road with crushed stone sidewalks. Crushed stone, straight edgestones and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

Hubbard street, Chestnut avenue to Lamartine street, is about 449 feet long. A contract for constructing the surface of this street was awarded to Thomas Minton. Work under this contract was begun November 20, 1899, and suspended December 27, 1899.

Idaho street, River street to Manchester street, is about 867

feet long. The contract for constructing the surface of this street was awarded to James McGovern. Work under this contract was begun July 20, 1899, and completed October 12, 1899, at a cost of \$1,978.30. It is a 6-inch macadam road with crushed stone sidewalks. Crushed stone, straight edgestones, and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

Ipswich street, Boylston road to Boylston street, is about 2,366 feet long. A contract for constructing the surface of this street was awarded to Collins & Ham. Work under this contract was begun August 16, 1899, and suspended December 8, 1899.

Lauriat avenue, Ballou avenue to Norfolk street, is about 769 feet long. The contract for constructing the surface of this street was awarded to Timothy F. Bradley. Work under this contract was begun August 22, 1899, and suspended November 25, 1899.

Lonsdale street, Dorchester avenue to Adams street. (See report of Superintendent of Streets for 1898, page 261.) When work was suspended December 28, 1898, the macadam roadway required a small amount of rolling, which was done early in season of 1899. The cost of the contract work for constructing the surface of this street was \$3,490.53, not including cost of artificial stone sidewalks. It is a 6-inch macadam road with artificial stone sidewalks. Crushed stone and straight edgestones were furnished by the city and hauled to the site of the work by the contractor; circular edgestones and gutter blocks were furnished on the work by the city; flagging for crosswalks was furnished by the contractor. Artificial stone sidewalks were laid on north side (9,977.5 square feet), by John C. Newborg, costing \$1,895.73; on south side (10,228.6 square feet), by the Barnes-Ruffin Company, costing \$1,943.43.

Maryland street, Savin Hill avenue to Bay street, is about 474 feet long. The contract for constructing the surface of this street was awarded to Philip Doherty. Work under this contract was begun October 18, 1898, and completed May 10, 1899, at a cost of \$1,250.05. It is a 6-inch macadam road with brick sidewalks. Crushed stone, straight edgestones and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones and bricks for sidewalks were furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

Middleton street, Norfolk street northerly, is about 593 feet long. A contract for constructing the surface of this street was awarded to Philip Doherty, November 14, 1898. Work under this contract was begun April 3, 1899, and completed August 19, 1899, at a cost of \$1,502.26. It is a 6-inch macadam road with crushed stone sidewalks. Crushed stone, straight edgestones and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were

furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

Newburg street, Beech street to Belgrade avenue, is about 1,980 feet long. The contract for constructing the surface of this street was awarded to James Doherty & Co. Work under this contract was begun November 14, 1899, and suspended December 16, 1899.

Northampton street, at Albany street. (See Albany street.)

North Harvard street, Western avenue to Charles river, is about 2,573 feet long. The contract for constructing the surface of this street was awarded to Geo. H. Wentworth & Co. Work under this contract was begun October 4, 1898, and completed June 23, 1899, at a cost of \$15,142.31. It is a Telford (8-inch) macadam (4-inch) road with crushed stone sidewalks. Crushed stone, stone for Telford base, straight edgestones and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

Oakview terrace, Centre street southeasterly, is about 861 feet long. The contract for constructing the surface of this street was awarded to Collins & Ham. Work under this contract was begun November 9, 1899, and suspended January 24, 1900.

Orkney road, Strathmore road to Sutherland road, is about 841 feet long. The contract for constructing the surface of this street was awarded to Daniel E. Lynch. Work under this contract was begun May 2, 1899, and suspended October 16, 1899.

Peterborough street, Audubon road to Audubon road (see report of Superintendent of Streets for 1897, page 373), is about 1,833 feet long. The contract for constructing the surface of this street was awarded to James Doherty & Co. Work under this contract was begun July 19, 1899, and completed September 27, 1899, at a cost of \$4,734.46. It is a 6-inch macadam road with crushed stone sidewalks. Crushed stone, straight edgestones, and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

Peeverell street, Sawyer avenue to Salcombe street, is about 486 feet long. The contract for constructing the surface of this street was awarded to Collins & Ham. Work under this contract was begun August 25, 1898, and completed May 22, 1899, at a cost of \$2,399.94. It is a 6-inch macadam road with crushed stone sidewalks. Crushed stone, straight edgestones and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

Pontiac street, Hillside street to Tremont street is about 919 feet long and 40 feet wide, and is to be cut through a solid ledge

for about 420 feet. The work of excavating the ledge was commenced January 19, 1900, by the Paving Division, and is still in progress.

Public Alley No. 101, District No. 2, Richmond street to Cross street, between Fulton and Commercial streets, is about 385 feet long, and averages 15.5 feet wide. A contract for paving and regulating this alley was awarded to Patrick McGovern. Work under this contract was begun August 28, 1899, and completed September 16, 1899, at a cost of \$1,044.23. This alley is paved with large granite blocks on a gravel bed with pitch and pebble joints, and is without edgestones or sidewalks. The paving blocks were furnished by the city and hauled to the site of the work by the contractor.

Public Alley No. 102, District No. 2, Marshall street to Creek square, is about 205 feet long and averages 10.5 feet wide. The contract for paving with asphalt and regulating this alley was awarded to Jones & Meehan. Work under this contract was begun October 10, 1899, and completed November 11, 1899, at a cost of \$874.27. This alley was paved with 2 inches of Seyssel natural rock asphalt on a 6-inch American cement concrete base, with edgestones and brick sidewalks for about half its length on one side. The paving blocks and edgestones required were furnished by the city and hauled to the site of the work by the contractors. Bricks for sidewalk were furnished on the work by the city.

Public Alleys Nos. 401, 402, 403 and 404, District No. 5, between Huntington avenue and St. Botolph street, from Irvington street to Public Alley No. 405; and **Public Alley No. 405**, District No. 5, from Huntington avenue to St. Botolph street. These alleys are respectively 490, 486, 466, 587, and 236 feet long, and each 16 feet wide. The contract for paving with asphalt and granite blocks and regulating these alleys was awarded to Simpson Brothers Corporation. Work under this contract was begun August 9, 1899, and completed October 11, 1899, at a cost for each alley, as follows: No. 401, \$1,885.19; No. 402, \$1,501.02; No. 403, \$1,423.07; No. 404, \$1,844.74; No. 405, \$690.79. These alleys were paved with 1½ inches of Trinidad land asphalt with 1½ inches of bituminous concrete binder on a 6-inch American cement concrete base, and also with granite blocks on gravel base with gravel joints where too steep for asphalt. These alleys, except No. 405, were constructed with a roadway, 8 feet wide, two brick sidewalks each four feet wide, bounded by granite edgestones. Two turn-outs were constructed in each alley, excepting No. 405, 30 feet long and 14 feet wide, so that two teams may pass. Alley No. 405 was constructed with a roadway 8 feet wide, and brick sidewalk on northerly side 5 feet wide and on southerly side 3 feet wide, each bounded by granite edgestones. Paving blocks, straight edgestones and flagging for crosswalks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones and bricks for sidewalks were furnished on the work by the city.

Public Alley No. 418, District No. 5, between Beacon and Marlborough streets, from Dartmouth street to Exeter street, is about 528 feet long and 16 feet wide. A contract for repairing the granite block pavement and brick sidewalks in this alley was awarded to H. Gore & Co. Work was begun August 30, 1899, and completed September 6, 1899, at a cost of \$168.22.

Public Alley No. 419, District No. 5, between Beacon and Marlborough streets, from Clarendon street to Dartmouth street, is about 548 feet long and 16 feet wide. The contract for paving with asphalt and regulating this alley was awarded to Simpson Brothers Corporation. Work under this contract was begun August 8, 1899, and completed October 2, 1899, at a cost of \$1,564.80. This alley was paved with $1\frac{1}{2}$ inches of Trinidad land asphalt, with $1\frac{1}{2}$ inches of bituminous concrete binder on a 6-inch American cement concrete base. This alley was constructed with a roadway 8 feet wide, and two brick sidewalks each 4 feet wide, with granite edgestones. Paving blocks, edgestones and flagging for crosswalks were furnished by the city and hauled to the site of the work by the contractor ; bricks for sidewalks were furnished on the work by the city.

Public Alley No. 420, District No. 5, between Beacon and Marlborough streets, from Berkeley street to Clarendon street, is about 548 feet long and 16 feet wide. A contract for repairing the brick sidewalks in this alley was awarded to H. Gore & Co. Work was begun August 29, 1899, and completed September 1, 1899, at a cost of \$80.85.

Public Alley No. 431, District No. 5, between Commonwealth avenue and Newbury street, from Hereford street to Gloucester street, is about 375 feet long and 16 feet wide. The contract for paving with asphalt and granite blocks and regulating this alley was awarded to Simpson Brothers Corporation. Work under this contract was begun August 7, 1899, and completed September 30, 1899, at a cost of \$953.67. This alley was paved with $1\frac{1}{2}$ inches of Trinidad land asphalt, with $1\frac{1}{2}$ inches of bituminous concrete binder on a 6-inch American cement concrete base, and with granite blocks on a gravel bed, with gravel joints where too steep for asphalt. It has a roadway 8 feet wide, and two brick sidewalks each 4 feet wide, with granite edgestones. Paving blocks, edgestones and flagging for crosswalks were furnished by the city and hauled to the site of the work by the contractor ; bricks for sidewalks were furnished on the work by the city.

Public Alley No. 701, District No. 8, between Union Park and Upton streets, from Shawmut avenue to Tremont street, is about 628 feet long and 20 feet wide. The contract for paving with asphalt and granite blocks and regulating this alley was awarded to the Barber Asphalt Paving Company. Work under this contract was begun September 16, 1899, and completed November 8, 1899, at a cost of \$3,077.46. This alley was paved with $1\frac{1}{2}$ inches of Trinidad lake asphalt, with $1\frac{1}{2}$ inches bituminous concrete binder, on a 6-inch American cement concrete base,

and with granite blocks on a gravel bed with gravel joints where too steep for asphalt. It has a roadway in part 9 feet wide, and in part 13 feet wide, with brick sidewalk northerly side 3.5 feet wide, and southerly side in part 3.5 feet wide and in part 7.5 feet wide, with granite edgestones; the wide sidewalks were built to protect the trees on the alley. Paving blocks, edgestones and flagging for crosswalks were furnished by the city and hauled to the site of the work by the contractor; bricks for sidewalks were furnished on the work by the city.

Public Alley No. 702, District No. 8, West Springfield street to Worcester street, is about 205 feet long and 15 feet wide. The contract for paving with asphalt and regulating this alley was awarded to Jones & Meehan. Work under this contract was begun September 29, 1899, and completed November 9, 1899, at a cost of \$862. This alley was paved with 2 inches of Seyssel natural rock asphalt on a 6-inch American cement concrete base. It has a roadway 9 feet wide, and two brick sidewalks each 3 feet wide, with granite edgestones. Granite blocks, edgestones and flagging for crosswalks were furnished by the city and hauled to the site of the work by the contractor; bricks for sidewalks were furnished on the work by the city.

Public Alley No. 703, District No. 8; **Public Alley No. 702** to Newland street, is about 192 feet long and 10 feet wide. The contract for paving with asphalt and granite blocks and regulating this alley was awarded to Jones & Meehan. Work under this contract was begun October 2, 1899, and completed November 9, 1899, at a cost of \$629.10. This alley was paved with 2 inches of Seyssel natural rock asphalt on a 6-inch American cement concrete base and with granite blocks on a gravel bed with gravel joints where too steep for asphalt. It has a roadway 8 feet wide; the edgestones are placed 1 foot from the building line, and are backed up with concrete. Paving blocks, edgestones and flagging for crosswalks were furnished by the city and hauled to the site of the work by the contractor.

Public Alley No. 2001, Webster street to Marginal street, is about 240 feet long, and for a distance of 65 feet from Webster street it is 10 feet wide; from this point 60 feet further it is 5 feet wide, and for the remaining distance of 115 feet it is 4.5 feet wide. The contract for paving and regulating this alley was awarded to Ward & Conlin. Work under this contract was begun September 25, 1899, and completed October 14, 1899, at a cost of \$305.20. This alley was paved with second-hand granite blocks (removed from Devonshire street) on a gravel bed with gravel joints for 125 feet from Webster street; the remaining distance was paved with bricks, except for a distance of 10 feet, which is occupied by a flight of wooden steps about 9 feet in height. These steps were repaired, as was also a board fence extending about 60 feet from Marginal street on the northwesterly side of alley. The difference in elevation of Marginal and Webster streets is 28 feet.

Rosseter street, Bullard street to Bowdoin avenue. (See report

of Superintendent of Streets for 1898, page 262.) Work on retaining wall was completed June 26, 1899. On account of making an opening in fence at estate of T. F. Badlam, the cost was increased \$28.18, making a total cost for retaining walls and fences of \$1,303.18.

Rowe street, Ashland street to Sharon street, is about 475 feet long. A contract for constructing the surface of this street was awarded to Philip Doherty. Work under this contract was begun December 7, 1899, and suspended December 23, 1899.

Rozella street, Adams street to Muzzy street, is about 322 feet long. The contract for constructing the surface of this street and for rebuilding the retaining wall at the Mary Hemenway School was awarded to T. F. Bradley. Work under this contract was begun November 27, 1899, and the work of rebuilding the retaining wall is still in progress.

St. Stephen street, St. Stephen street to Bryant street is about 803 feet long. (See report of Superintendent of Streets for 1898, page 262.) The contract for constructing the surface of this street was awarded to James Doherty & Co. Work under this contract was begun June 27, 1899, and completed August 8, 1899, at a cost of \$1,879.16. It is a 6-inch macadam road with crushed stone sidewalks. Crushed stone, gutter blocks and straight edgestones were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

School street, at Athelwold street, was widened by taking 548 square feet of land from the corner estate. The contract for doing the necessary work in connection with this widening was awarded to Collins & Ham. Work under this contract was begun July 5, 1899, and completed July 17, 1899, at a cost of \$125. The work done was to build a 6-inch macadam roadway and crushed stone sidewalks, set edgestones and pave granite block gutters. All stock required was furnished by the city and hauled to the site of the work by the contractors.

Seymour street, Canterbury street to Brown avenue, is about 1,150 feet long. The contract for constructing the surface of this street was awarded to T. F. Welch. Work under this contract was begun December 5, 1899, and suspended December 21, 1899.

Shirley street, Massachusetts avenue to Norfolk avenue, is about 877 feet long. The contract for constructing the surface of this street was awarded to J. F. Cullen. Work under this contract was begun June 26, 1899, and completed October 10, 1899, at a cost of \$3,505.35. It is a 6-inch macadam road, with brick sidewalks. Crushed stone, straight edgestones and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones and bricks were furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

Spencer street, Athelwold street to Park street, is about 480

feet long. The contract for constructing the surface of this street was awarded to James McGovern. Work under this contract was begun June 26, 1899, and completed August 3, 1899, at a cost of \$787.76. It is a 6-inch macadam road with crushed stone sidewalks. Crushed stone, straight edgestones and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

Spencer street, Wheatland avenue to Talbot avenue, is about 625 feet long. The contract for constructing the surface of this street was awarded to James McGovern. Work under this contract was begun November 20, 1898, and completed May 25, 1899, at a cost of \$1,500.54. It is a 6-inch macadam roadway with crushed stone sidewalks. Crushed stone, straight edgestones and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

Stanley street, Quincy street to Bellevue street, is about 375 feet long. The contract for constructing the surface of this street was awarded to James Doherty & Co. Work under this contract was begun May 28, 1899, and completed July 17, 1899, at a cost of \$1,260.63. It is a 6-inch macadam road with brick sidewalks. Crushed stone, straight edgestones and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones and bricks for sidewalks were furnished on the work by the city; flagging for crosswalks was furnished by the contractor.

Thane street, Athelwold street to Park street, is about 479 feet long. The contract for constructing the surface of this street was awarded to Philip Doherty. Work under this contract was begun June 29, 1899, and completed August 3, 1899, at a cost of \$552.79 (not including cost of artificial stone sidewalks). It is a 6-inch macadam road with artificial stone sidewalks. Crushed stone, straight edgestones and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the contractor. Artificial stone sidewalks were laid by the Barnes-Ruffin Company from Park street 81 feet on the easterly side and 140 feet on the westerly side, in all 1,440.2 square feet, costing \$320.44. The remaining artificial stone sidewalks had been constructed before the street was laid out.

Trinity place, St. James avenue across Stuart street, is about 398 feet long. The contract for paving with asphalt and regulating this street was awarded to the Barber Asphalt Paving Co. Work under this contract was begun August 21, 1899, and completed September 28, 1899, at a cost of \$3,516.09. It is an asphalt road with brick sidewalks. The roadway is paved with 1½ inches of Trinidad lake asphalt, with 1½ inches of bituminous

concrete binder on a 6-inch American cement concrete base. New edgestones, granite blocks, and flagging for crosswalks were furnished by the city and hauled to the site of the work by the contractor; bricks for sidewalks were furnished on the work by the city.

Waldeck street, Melville avenue to Tonawanda street, is about 1,635 feet long. The contract for constructing the surface of this street was awarded to J. F. Cullen. Work under this contract was begun September 29, 1899, and completed December 5, 1899, at a cost of \$4,207. It is a 6-inch macadam road, with crushed stone, tar concrete and artificial stone sidewalks. Crushed stone, straight edgestones, and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city; flagging for crosswalks was furnished by the city. The street was constructed in the following manner: Part between Melville avenue and Park street, 781 feet long and 40 feet wide, has roadway (including gutters) 26 feet wide; two crushed stone sidewalks, each 7 feet wide, bounded by granite edgestones. In this part there is 179 linear feet of artificial stone sidewalk which was constructed before the street was laid out. Part between Park street and Tonawanda street, 854 feet long and 50 feet wide, has a roadway 26 feet wide (including gutters), two tar concrete walks each 6 feet wide, and two loam spaces each 6 feet wide, bounded by granite edgestones; these loam spaces were sodded about 2 feet in width back of the edgestones. The tar concrete sidewalks were constructed before the street was laid out.

Wensley street, Heath street across Bickford avenue, is about 720 feet long. The contract for constructing the surface of this street was awarded to Collins & Ham. Work under this contract was begun May 10, 1899, and completed November 14, 1899, at a cost of \$2,600.16 (including the cost of furnishing and laying 472 linear feet of ground water drain 4 inches in size). It is a 6-inch macadam road with crushed stone sidewalks. Crushed stone, straight edgestones, and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edgestones were furnished on the work by the city. Flagging for crosswalks was furnished by the contractor.

West Selden street, Morton street to Manchester street, is about 3,424 feet long. The contract for constructing the surface of this street was awarded to James McGovern. Work under this contract was begun July 21, 1899, and is still being carried on.

Woodlawn street, Hyde Park avenue to Forest Hills Cemetery, is about 1,068 feet long. The contract for constructing the surface of this street was awarded to Thomas A. Dolan. Work under this contract was begun July 24, 1899, and completed November 13, 1899, at a cost of \$1,933.99. It is a 6-inch macadam road with crushed stone sidewalks. Crushed stone, straight edgestones and gutter blocks were furnished by the city and hauled to the site of the work by the contractor; circular edge-

stones were furnished on the work by the city ; flagging for cross-walks was furnished by the contractor.

Worthington street, Fenway to Longwood avenue, is about 1,151 feet long. A contract for filling this street to sub-grade was awarded to J. C. Coleman & Son, at the rate of 44 cents per cubic yard measured in the fill. Work under this contract was begun July 27, 1899, and completed December 30, 1899 ; 17,251 cubic yards were paid for at 44 cents per cubic yard, equal to \$7,590.44.

MISCELLANEOUS.

Contracts were awarded on the following streets, but at the end of the season no work had been done :

Aberdeen street, Beacon street to Brookline branch of Boston and Albany Railroad.

Callender street, Tucker street across Don street.

Custer street, Woodman street to Arnold Arboretum.

Dresden street, Boylston street to Spring Park avenue.

Edison green, Dorchester avenue to Pond street.

Esmond street, Blue Hill avenue to Harvard street.

Shafter street, Waterlow street to Faxon street.

Warner street, Harvard street to Park street.

Plans have been prepared of the following " new streets " on which the work of construction has not been commenced :

Barry street, Quincy street to Richfield street.

Boston street, Mt. Vernon street to Columbia road.

Draper street, Robinson street to Bowdoin street.

Fowler street, Glenway street to McLellan street.

Jersey street, Brookline avenue to Audubon road.

Montague street, Ashmont street to Roslin street.

Public Alley No. 901, Hemenway street to another part of Hemenway street.

South street, Jamaica street to Arborway.

Stratford street, Anawan street to Clement avenue.

Wainwright street, Centre street to Welles avenue.

Williams street, Washington street to Call street.

Woodcliff street, Howard avenue about 214 feet easterly.

GRADING STREET RAILWAY TRACKS.

The grades for tracks in the following streets have been determined. On streets marked ** the surveys were made and levels taken by the companies :

(Boston Elevated Railway Company.)

Atlantic avenue, Dewey square to Oliver street.

Atlantic avenue, Dewey square to Kneeland street.

Boston street, Edward Everett square to Washburn street.

Boylston street, Ipswich street to Brookline avenue.

Cambridge street, Brighton avenue across Washington street.

Cambridge street, North Harvard street to Charles river.

Causeway street, Prince street to Haverhill street.

Charlestown street, Haymarket square to Charlestown bridge.

Columbia road, Blue Hill avenue to Edward Everett square.

Commercial street, Prince street to Hull street.

Dewey square.

Federal street, Dewey square to Milk street.

Ipswich street, Boylston road to Boylston street.

Kingston street, Bedford street to Essex street.

Leverett street, Causeway street to Craigie's bridge.

Talbot avenue, Norfolk street to Blue Hill avenue.

Washington street, Blue Hill avenue to Glenarm street.

(*West Roxbury and Roslindale Street Railway Company.*)

**** Ashland street**, South street to 1,100 feet east of Sutton street.

**** Spring street**, Gardner street to Dedham line.

(*Union Freight Railroad Company.*)

Atlantic avenue, Dewey square to Oliver street.

Atlantic avenue, Dewey square to Kneeland street.

Causeway street, Prince street to Haverhill street.

Commercial street, Prince street to Hull street.

Dewey square.

Total length of single track grades 16.9 miles.

PLANS AND SPECIFICATIONS.

Aberdeen street, plan and specification of retaining wall, fence and bulkhead.

Belvidere street, plan and specifications for wooden bulkhead and fence.

Burt street, plan and specifications for iron fence on culvert.

Castle square, plan with elevations.

Columbia road, plan of retaining wall and steps at Hamilton street.

Edward Everett square, plan and specifications for park curb.

Fairmount street, plan and specifications for ground water drain.

Freeport street, plan and specifications for iron fence on wall at Dorchester Yacht Club.

Harold street, plan and specifications for retaining wall and iron fence.

Haverhill street, plan of sidewalk southwesterly side leading from Haymarket square.

Ipswich street, plan and specifications for concrete bulkhead and fence along location of Boston and Albany Railroad.

Rozella street, plan and specifications for retaining wall and granite steps.

Wensley street, plan and specifications for ground water drains.

A set of plans showing the improved pavement in the central part of the city has been prepared for the use of the Permit Office, the object being to show the location of all openings made in this class of pavement. These openings have been plotted from the inspectors' notes upon request.

COLUMBIA ROAD.

Columbia road construction has been completed from Blue Hill avenue to Edward Everett square, with the exception of the bridge by which the Midland Division of the New York, New Haven and Hartford Railroad will cross the road; this work has not been commenced.

Bridge over the Railroad and Columbia Avenue.

The work under the contract with Mr. Dennis F. O'Connell, dated October 10, 1898, was finished in June at a cost of \$25,773.44. This work consisted of building two abutments and a pier. The southerly wing wall of the west abutment was left unfinished, as it was necessary to leave Carson street unobstructed until other means of access to Mt. Vernon street east of the railroad can be provided.

The foundations rest on a hard clay or sand bottom at Grade 2.5 above city base for the West abutment and at Grade 2 for the East abutment and pier. The foundations below a grade 3 feet below the grade of the surface in front are of American cement concrete, and above that grade the abutments and pier are of granite ashlar and rubble backing with cut stone parapets and coping. The walls are well ballasted with quarry chips.

Road Surfacing.

The section of road between Dorchester avenue and Buttonwood street has been completed. The work was done under a contract with Philip Doherty, dated June 14, 1899, and was finished August 30, 1899, at a cost of \$1,911.04.

Bridge over Shoreham Street.

This bridge is to be built to carry Columbia road over Shoreham street, a traffic street to connect Mt. Vernon street with Carson street. It will be parallel with the railroad and 100 feet distant from it. Its grade will be the same as the existing streets, and the crossing of the Parkway by a traffic street at this point will be avoided.

Under a contract with Mr. Michael A. Meany the excavation across Columbia road above the grade of Shoreham street was completed on January 1, 1900, at a cost of \$591.44.

Plans have been prepared for the construction of the bridge, but the work of erection awaits the completion of a proposed storm water sewer at this point.

Filling.

The section of Columbia road between the bridge over the railroad and Mercer street, South Boston, also so much of the proposed Columbia avenue as lies east of the old location of the New York, New Haven and Hartford Railroad have been filled to grade. For this work there were three contracts. Under a contract with Mr. J. J. Sullivan, dated December 24, 1898, there were brought from the excavation near Story street, South Boston, 4,978 cubic yards at a cost of \$2,986.80. Under a contract with John S. Jacobs & Son, dated October 20, 1898, there were brought from the site of the new high school building on Thomas Park 25,811 cubic yards at a cost of \$9,233.85.

The larger part of the filling was done under a contract with Mr. Simon J. Donovan, dated December 28, 1898. The work was finished in October, and there were deposited 116,471 cubic yards at 69½ cents per cubic yard. This contract included the construction of an extension of the culvert under the railroad to the bay outside the slope of the new filling. This culvert is of wood on a pile foundation; it is 250 feet in length and 4 feet by 5 feet 8 inches inside. The total amount paid under the contract was \$83,375.59.

Under the contract with Mr. Simon J. Donovan for filling that portion of Columbia road between Atlantic and I streets, dated October 25, 1898, there have been deposited 71,109 cubic yards. The work is not yet completed.

COMMONWEALTH AVENUE.

Warren street to Chestnut Hill avenue, cross-section plans for estimating amount of rock excavation under five contracts, aggregating 45,857.4 cubic yards costing \$64,634.84, which includes the cost of loading and hauling 9,851.7 cubic yards to the crusher and loading 19,436.7 cubic yards into city teams at foot of ledge. This work was begun in September, 1898. Plans and specifications were also prepared for two retaining walls, one near Summit avenue, and one near Sutherland road; these walls were not built.

During the year the reconstruction of Commonwealth avenue from Brighton avenue to Chestnut Hill avenue has been under way, and is nearly completed as far as Chiswick road.

CONGRESS STREET, SOUTH BOSTON.

On Congress street, between B and C streets, a roadway about 40 feet in width has been paved with granite blocks on a gravel

base, granite edgestones have been set on the southerly side of the street, and two catch-basins have been built. The paving of this short portion of Congress street in connection with the work done by the Commonwealth, and that under the decree abolishing the grade crossing on this street has provided a continuous thoroughfare paved with granite from Atlantic avenue to South Boston by way of the L-street bridge.

DUMPING WHARF FOR THE SANITARY DIVISION.

The high platform and runway at the Sanitary Wharf on Albany street was completed in March by Thomas E. Ruggles, at a cost of \$5,476.

EAST BOSTON FERRIES.

New drop.—The northerly drop for the East Boston landing of the South Ferry was completed, and put in commission February 4, 1899, at a cost for contract work of \$5,775.

CHARLES GATE BRIDGE OVER IPSWICH STREET.

Under a contract with the King Bridge Co., of Cleveland, Ohio, dated March 25, 1899, the steel work was completed on January 2, 1900. A contract has been made for the erection of the ornamental railing of the same design as that on the bridge over the railroad.

As the season was too far advanced to permit of laying cement concrete, when the steel work was finished, the laying of the concrete and asphalt floor of this bridge has been deferred until spring, and a temporary wooden floor has been constructed to allow of the bridge being used during the winter.

SOUTH UNION STATION.

The portion of the paving on the westerly half of Dorchester-avenue extension, between the southerly end of the new station and Federal-street bridge, which was not laid in 1898, has been completed. The entire length of the new avenue, on which was laid a temporary granite pavement on fresh fillings in 1898, has been repaved, and the edgestone reset. The sidewalk on the harbor side of the avenue has been paved with brick, and an iron railing built on the sea wall for its entire length.

The paving on Summer-street extension, between Dewey square and the harbor line, has been relaid, and a bulkhead carrying a plank sidewalk has been built along the property of the Boston Electric Light Company.

Early in the season the narrow strip of paving on Atlantic avenue in front of the express buildings, which could not be laid when the other paving was done around the station, was completed and the edgestone set.

The work of paving Atlantic avenue, between Dewey square and Kneeland street, with pitch and pebble joints and on a concrete base, was commenced early in November, 1899. This work had been delayed until almost the close of the season, because of the special track-work of the Boston Elevated Railway and the Union Freight Railroad in Dewey square. As soon, however, as any of this material was in position the work of concreting and paving was carried on day and night whenever the weather and temperature would permit. With the exception of a small area at Beach street, where the special track-work was not ready, all of the paving between the tracks and westerly of the tracks on Atlantic avenue has been put on a concrete base, the paving laid with pitch and pebble joints, the edgestones set and the westerly sidewalk laid with brick or artificial stone. The work in Dewey square has also been completed with the exception of two small areas adjoining Summer and Federal streets. A small refuge island has been built in the square, surrounded by granite edgestone and paved with brick.

MISCELLANEOUS.

Lines and grades have been furnished for the construction of Talbot avenue, which is now completed. Some work has been done on Blue Hill avenue, between Walk Hill street and Mattapan.

Two hundred and six petitions to lay artificial stone sidewalks have been reported upon to the Superintendent of Streets.

The amount of edgestone required for one hundred and forty-nine estates has been furnished to the Paving Division.

In seventy-three cases the Paving Division has been notified of the necessity of resetting edgestone on account of artificial stone sidewalks to be laid.

Forty-two petitions for permits to construct coal-holes, bulk-heads and sidewalk areas, have been examined and reported upon.

Ninety-one petitions, calling for eighty-seven catch-basins, were referred by the Sewer Division and reported upon.

Locations were furnished the Sewer Division, for construction purposes, of nine hundred and forty-three catch-basins on one hundred and sixty different streets.

MISCELLANEOUS WORK AND CONSTRUCTION IN 1899.

CHARLESGATE BRIDGE OVER IPSWICH STREET.

See page 162.

CHELSEA BRIDGE NORTH.

General plans were made for widening the draw-way from 45 to 60 feet to accommodate the larger class of vessels needed for carrying coal; the widening to be made on the Chelsea side of the channel. These plans were approved by the War Department, and further plans were made for a temporary wooden pile bridge around the draw to accommodate travel while work was being done on the permanent bridge; the principal cost of the temporary bridge being borne by the New England Gas & Coke Co. and the Lynn & Boston Railroad Co.

This temporary bridge is 46 feet wide, with one sidewalk 8 feet wide on the down-stream side. The old draw used at West Boston bridge, the engine, shafting and other machinery were moved to this bridge and set up on foundations prepared for them; the draw was strengthened by renewing several chord-sticks, keyes and packing blocks, about two-thirds of the four-inch deck plank and all of the sheathing. The contract for doing the work was awarded to William J. Lawler, and the work is nearly completed.

Specifications and plans have been made for the work on the main bridge, but no contract has yet been made for doing the work.

A contract has been made with the Boston Bridge Works for lengthening the draw on the permanent bridge.

COLUMBIA ROAD.

See pages 160 and 161.

Bridge over the railroad and Columbia road — Road surfacing.

Bridge over Shoreham street.

Filling.

COMMONWEALTH AVENUE.

See page 161.

CONGRESS-STREET GRADE CROSSING.

During the year the work of building a new street in substitution for Congress street, where it crosses the tracks of the Midland Division of the N. Y., N. H. & H. R.R., has been carried on in accordance with the decree of the Superior Court. The work was so far advanced that on August 14, 1899, the portion of the new street across Fort Point channel and the approach leading to A street, South Boston, were opened to public travel, and have remained open since that date. At that time, however, only one of the draws was put in service, the power for operating it being furnished by a temporary steam plant. Later an electric plant was installed, and on January 26, 1900, the care of the portion of the new street and the approach which had been opened to travel and the operating of the draws, were turned over to the Street Department.

The work done during the past year on the several sections of the new street and its approaches has been substantially as follows:

On the approach leading from Atlantic avenue the work has been the building of a sea-wall to support the filling on the southerly side of Congress street. As the piers under the building projected so far into the street it was necessary to build the wall about five feet back from the street line and to support the sidewalk on overhanging beams. This work was done under a contract with W. J. Lawler, and was completed early in January. Under the same contract a temporary roadway and sidewalk were built on the northerly side of the street over the area taken for widening Congress street under the decree. By this means it has been possible to provide a clear roadway about thirty feet wide for traffic during the time required for the construction of the sea-wall, the extension of the storm overflow sewer and the removal of the old bridge. A large amount of filling has been deposited between the sea-walls on either side of the street so that as soon as the southerly half of the wall across the street on the harbor line is completed the street can be paved on that side and travel transferred to it. A contract has been made with W. L. Miller, dated November 6, 1899, for building the sea-wall along the harbor line on the easterly side of Dorchester avenue extension, between Summer and Congress streets, calling for the work to be completed by May 1, 1900, but as it was impossible to clear the premises so as to begin work promptly, it will be well into the summer before the wall is finished. By an arrangement with the owners, a contract

was made with A. A. Elston & Co. for removing the portion of the building within the street area, and the building is now substantially out of the way. A contract has been made with W. J. Lawler for building a sea-wall on the westerly side of this street, calling for its completion by May 1. This sea wall will also be used as a foundation for the new side wall of the building.

The work done during the year to complete the section of the new street between Dorchester avenue extension and A street, already opened to travel, has been the erection of the steel superstructure and flooring of the fixed spans of the bridge over Fort Point channel, which was done by the A. & P. Roberts Co. under two contracts, and was finished early in August, 1899. The roadway paving of granite blocks, with pitch and pebble joints, and the waterproofing of the flooring were done under contract with Patrick McGovern, and was completed about August 1, 1899. The asphalt sidewalks were laid by the Boston Asphalt Co. The pile foundations for the draws and the necessary draw fender piers, which were under contract with W. J. Lawler at the date of the last report, were finished in August, 1899, and the same contractor built the fender guard on the northerly side of the bridge. The two retractile draws were built under a contract with the Berlin Iron Bridge Co. and the trucks upon which the draws move were made by the Coffin Valve Co. from the standard patterns owned by the City. The motors were furnished by the General Electric Co., and the other machinery required for moving the draws was built by Miller & Shaw. A neat house has been built for the draw-tenders from plans prepared by the Architect's Division of this department, and furnished with all the necessary furniture.

Timber bulkheads were built along the southerly side of the new street between Fort Point channel and A street and on both sides of the approach from A street, under a contract with Ross & Fowler. Fences were built on these bulkheads and plank sidewalks on both sides of the approach from A street under contract with W. J. Lawler. A plank sidewalk was also built on the northerly side of the new street from A street to Fort Point channel. The filling of this portion of the street was done by carts at a cost of 35 cents per cubic yard measured in place, except about the anchors of the bulkheads where 20 cents per cubic yard additional was paid for ramming the filling in six-inch layers. The catch-basins and piping for surface drainage for this section were built under contract with H. Gore & Co., and the granite block paving, with gravel joints, was laid and the edgestones set by Patrick

McGovern, the whole being finished about August 1, 1899.

On the section between A street and the freight yard of the N. Y., N. H. & H. R.R., the only work done during the year has been the building of a timber bulkhead on both sides of the street for its entire length, under a contract with W. H. Ellis, which was completed in November, 1899, and the depositing of the filling required to bring the street to the sub-grade required for paving. This filling was also done by carts at a cost of 35 cents per cubic yard, measured in place. The superstructure of the bridge over A street is now under contract with the New England Structural Co., calling for its erection in October last, but on account of the impossibility of obtaining the delivery of structural steel from the rolling mills at the date agreed, work on this bridge has been delayed. The material is now, however, in the shops, and they will be erected early in the spring.

On the section east of the railroad freight yards the easterly abutment of the bridge over B street, and both abutments, and centre pier of the bridge over C street, were completed in August, 1899, under a new contract made with Ross & Fowler, the former contractor having abandoned the work in February last. A contract for the superstructure of the bridge over B street was made with the Pennsylvania Steel Co., dated August 3, 1899, and required that the bridge should be erected before May 1, 1900. The work is now well under way, and will undoubtedly be completed on time. The steel work of the bridge over C street was erected by the New England Structural Co., and was completed in October last. On the northerly side of the street, between B and C streets, a timber bulkhead has been built to support the filling, and on the southerly side, from B street, for a distance of 291 feet in front of the property of the Cunningham Iron Works, a pile bulkhead has been built. The outer line of piles, which are spaced three feet on centres, are surrounded by concrete, forming a continuous wall two feet in thickness. This form of construction was adopted to protect the piles in case of a fire occurring in the adjoining wooden buildings. The filling of this entire section, including the approach along Fargo and D streets, has been completed during the year. Fully three-quarters of this filling was brought in by train over the N. Y., N. H. & H. R.R., a special track being laid for this purpose.

Under a contract made by the Board of Harbor and Land Commissioners for the paving of that part of Fargo street controlled by the Commonwealth, the portion of that street between C and D streets, which was laid out by the decree of

the court as an approach to the new street, has been paved with granite blocks, the edgestones set and the necessary catch-basins and drains built for surface drainage. The amount paid for this work was \$7,173.76. The portion of this approach on C street has also been paved with granite blocks, the edgestones set, and the crushed stone sidewalks and fences built. By doing this paving in advance of the other work a continuous paved street was opened to public travel from L-street bridge to the city proper.

DORCHESTER AVENUE GRADE CROSSING.

The work of abolishing the grade crossing on Dorchester avenue in South Boston is being done in accordance with the decree, dated June 22, 1898, of a commission appointed by the Superior Court. The plan calls for the relocation of the Old Colony Division of the New York, New Haven & Hartford Railroad between Crescent Avenue and South Boston Stations. The new line leaves the old one at a point 551.03 feet north of Crescent-avenue Station and a short distance south of Columbia road. It curves to the west, crossing Dorchester avenue about 970 feet south of Andrew square. It crosses Boston street about 630 feet south of Andrew square; thence, curving northerly, it crosses Swett street about 580 feet west of Andrew square. It continues across South Bay and crosses the Midland Division of the New York, New Haven & Hartford Railroad by an overhead bridge about 900 feet southwest of the present bridge over the same road. The line then continues through the yard of the Old Colony Division until it connects with the present line.

The decree requires the City to do all work necessary to raise the grades of the three main thoroughfares of Dorchester avenue, Boston street, and Swett street, so as to pass over the railroad, and also to make necessary changes in the grades of all streets connecting with these main streets, with the exception of Blake street, which is discontinued.

Dorchester Avenue.

A contract was made on May 27, 1899, with Messrs. Holbrook, Cabot and Daly for building the abutments of the bridge on Dorchester avenue over the railroad. The contract provided that so much of the work as could be done without obstructing travel should be done at once. Work was begun on June 22, and suspended on August 15. It was resumed on December 16, and is still in progress.

On December 17 Dorchester avenue was closed to travel. The car tracks, paving and curbstones were removed at once and work begun on the filling. This latter work is now in progress.

Boston Street.

The first work entered upon by the city was the raising of Boston street.

On March 1 the street was closed to travel, and work was begun by Messrs. Holbrook, Cabot & Daly under their contract, dated January 16, 1899, for building the abutments of the bridge. This work was finished on June 27, at a cost of \$18,247.29. The abutments are built with American cement concrete foundations, resting on a hard clay bottom at grade 3.5 above city base, and with the top of the concrete at grade 12. Above this grade the abutments are of granite ashlar, with rubble backing, and cut stone bridge seat and parapet courses.

On September 22 a contract was made with the same firm for the building of a temporary wooden bridge superstructure, to serve until the erection of the permanent bridge. The work was finished on December 4, at a cost of \$1,742.49.

Owing to the failure to make satisfactory settlements of damages with several of the abutters on Boston street, it was necessary to build several retaining walls within the lines of the street for supporting the street. The total length of such walls was 496 feet, and their cost, \$8,637.86. These walls were built by Messrs. Holbrook, Cabot & Daly.

Under an arrangement with the Boston Electric Light Company the street front of their building on Boston street was strengthened by buttresses. The work was done by that company at a cost of \$3,120.

The filling of Boston street and the approach from Ellery street was done by several parties, the material having been obtained mostly from cellar excavations. A small amount was obtained from the New York, New Haven & Hartford Railroad Company. The total amount of filling deposited was 15,117 cubic yards, for which there was paid \$5,120.80.

On September 23, 1899, a contract was made with Messrs. Jones & Meehan for paving and regulating Boston street, and parts of Ellery and Rawson street. This work was completed on December 28, at a cost of \$12,677.26.

The Boston Elevated Railway Company having laid its tracks through Boston street with temporary tracks in Howell and Bellflower streets, connecting with those on Dorchester avenue, the travel was turned on to Boston street on December 17, 1899.

Swett Street.

On Swett street a temporary road was built around the site of the new bridge, over the railroad. The filling was composed of ashes furnished by the Street Department, and of earth from the excavations for the bridge. By this means travel was maintained through Swett street until November 8, 1899, when the street was closed.

On February 21, 1899, a contract was made with Messrs. Holbrook, Cabot & Daly, for building the abutments for the bridge over the railroad, on Swett street. The work was completed on August 1, 1899, at a cost of \$17,406.55. The work was of the same character as that for the bridge on Boston street.

The filling of the street has been completed with the exception of a small portion due to the recent widening of the street to a width of 70 feet. Most of the filling has been furnished by the New York, New Haven & Hartford Railroad Company.

On December 1, 1899, a contract was made with William L. Miller for building a temporary wooden superstructure for the bridge on Swett street. The work was completed on January 27, at a cost of \$2,798. The bridge occupies about one-half of the width of the street.

A contract was made with Messrs. Jones & Meehan, on December 8, 1899, for paving and regulating Swett street, and parts of Dexter and Ellery streets. This work is not yet completed.

DUMPING WHARF FOR THE SANITARY DIVISION.

See page 162.

EAST BOSTON FERRIES.

New drop. See page 162.

LONG ISLAND WHARF.

At the request of the Penal Institutions Commissioner plans and specifications were made by this department for building a wharf on the easterly side of Long Island.

This wharf was proposed to be built in order to facilitate the transportation of children from the city to the southerly end of this island, in connection with the George L. Randidge fund excursions and the Boston Municipal Camp.

The wharf has not been built.

MALDEN BRIDGE.

The Acts of 1899, chapter 280, requires the City Engineer to construct a bridge not less than sixty feet wide across Mystic river, at or near the site of the so-called Malden bridge.

General plans made for a bridge sixty feet wide with a draw-way of fifty feet and for a temporary bridge forty feet wide to be used while the new bridge was being constructed. November 23, 1899, a contract was made with Benj. Young for building the temporary bridge for \$28,867, and 15 per cent. of the work has been done.

SOUTH UNION STATION.

See page 163.

TEMPORARY HIGHWAY BRIDGE ACROSS CHARLES RIVER.

This is a pile bridge 2,248 feet long and 47.17 feet wide, with one sidewalk ten feet wide on the up-stream side, and is provided with two draws; it is about 300 feet south of West Boston bridge, and connects with the approaches to that bridge; it was built under two contracts, the first was for building 1,920 feet of the bridge and was completed July 3, by Benjamin Young, at a cost of \$33,639.24; the second contract was made April 27, 1899, with W. J. Lawler for building the draws, piers, fenders, and remaining parts of the bridge, and the work was completed August 15, at a cost of \$20,834.30. The draw machinery was furnished by Miller & Shaw, the electrical apparatus by the General Electric Company, and the electricity for operating the draw is obtained from the Boston Elevated Railway. This bridge was opened to the public October 19, 1899.

MISCELLANEOUS WORK.

A system of inside fire protection for the hospital at Long Island was designed and carried out, the work being done under contract by the Walworth Manufacturing Company.

A system of inside fire protection was established in the Sloyd building on Rainsford Island, the work being done by the Repair Division of the City of Boston. A complete system of inside fire protection was established in the Ann White Vose Home for Nurses at the City Hospital, the work being done under contract by Richardson & Clements.

A salt-water system of fire protection on Long Island has been partially completed; 3,400 linear feet of main pipe

have been laid, 11 hydrants have been established, and the pump, well, and concrete retaining wall have been completed. The failure of the contractors to complete the suction pipe and crib in season, made it inadvisable to attempt to finish the work this year.

About 130 feet of sea-wall was built at the wharf on the west side of Long Island, the work being done under contract by Wm. L. Miller.

Studies and estimates were made for the improvement of the bank of Charles river, between Massachusetts avenue and Mt. Vernon street, and for tunnelling Beacon Hill from the foot of Mt. Vernon street to Scollay square, so as to provide a new route for street-car traffic.

Additional estimates have been made of the cost of the proposed abolishment of the grade crossings on Blue Hill avenue and Oakland street.

Plans and specifications have been prepared for steps and railings on Independence square, South Boston, at the corners of Second and M streets, and Second and N streets.

Respectfully submitted,

WILLIAM JACKSON,

City Engineer.

CITY ENGINEERS.

1850-1899.

E. S. CHESBROUGH, M. Am. Soc. C. E.,
November 18, 1850, to October, 1855.
(Died August 18, 1886.)

JAMES SLADE,
October 1, 1855, to April 1, 1863.
(Died August 25, 1882.)

N. HENRY CRAFTS,
April 1, 1863, to November 25, 1872.

JOSEPH P. DAVIS, M. Am. Soc. C. E.,
November 25, 1872, to March 20, 1880.
(Resigned March 20, 1880.)

HENRY M. WIGHTMAN, M. Am. Soc. C. E.,
April 5, 1880, to April 3, 1885.
(Died April 3, 1885.)

WILLIAM JACKSON, M. Am. Soc. C. E.,
April 21, 1885, to the present time.

APPENDICES.

- APPENDIX A. — Table showing the widths of openings for vessels in all bridges provided with draws.
- APPENDIX B. — List of estimate plans furnished the Assessment Division of the Street Laying-Out Department from February 1, 1899, to February 1, 1900.
- APPENDIX C. — Table of accident and other plans made for the Law Department from February 1, 1899, to February 1, 1900.
- APPENDIX D. — Table of surveys, plans, and profiles made by the Surveying Division of the Engineering Department from February 1, 1899, to February 1, 1900.
- APPENDIX E. — List of streets where frontages have been obtained for the Sewer Division of the Street Department, for Sewer Assessments, from February 1, 1899, to February 1, 1900.
- APPENDIX F. — Engineering Department property schedule.
- APPENDIX G. — Elevations referred to Boston city base.
- APPENDIX H. — Engineering Department Annual Reports, 1867-1899.

APPENDIX A.

Table showing the Width of Openings for Vessels in all Bridges provided with Draus, in the City of Boston, January, 1900.

NAME OF BRIDGES.	LOCATION.	NUMBER OF OPENINGS.	WIDTH.	
			Feet.	In.
Boston & Maine R.R., Eastern Division	Boston to Charlestown	1	39	7
" " " "	Over Miller's River	1	35	6
" " " "	Boston to East Cambridge	1	40	2
" " " "	" " " "	1	39	7
" " " "	Boston to Charlestown	1	39	7
" " " "	Over Miller's River	1	35	10
Broadway	Over Fort-point Channel	1	43	6
Cambridge-st.	Brighton to Cambridge	1	36	4
Canal	Boston to East Cambridge	1	36	0
Charles-river	Boston to Charlestown	1	*36	0
-Charlestown (Main Channel)	" " " "	2	50	0
" " " "	" " " "	"	50	0
Chelsea (South Channel)	Charlestown to Chelsea	1	38	9
" " " "	" " " "	1	45	0
Chelsea-st. (East Boston side)	East Boston to Chelsea	2	36	0
" " (Chelsea side)	" " " "	"	36	0
Commercial-point	Dorchester	1	24	2
Congress-st. (Boston side)	Over Fort-point channel	2	43	3
" " (So. Boston side)	" " " "	"	43	9
Dover-st.	" " " "	1	37	0
Essex-st.	Brighton to Cambridge	1	35	9
Federal-st.	Over Fort-point Channel	1	41	10
Fitchburg R.R.	Boston to Charlestown	1	36	0
" " (for teaming freight)	" " " "	1	36	0

Table showing the Widths of Openings for Vessels, etc. — Continued.

NAME OF BRIDGES.	LOCATION.	NUMBER OF OPENINGS.	WIDTH.	
			Feet.	In.
Grand Junction R.R.	Brighton to Cambridge	1	35	9
"	East Boston to Chelsea	1	34	6
Granite	Dorchester to Milton	1	36	0
Harvard	Boston to Cambridge	2	36	6
"	"	.	36	10
L-street	Over Reserved Channel, South Boston	.		
Malden	Charlestown to Everett	1	40	0
Meridian-st. (East Boston side)	East Boston to Chelsea	1	43	2
"	"	2	59	2
Mt. Washington-ave. (Boston side)	Over Fort-point Channel	.	59	0
"	"	2	42	2
Neponset	Dorchester to Quincy	.	42	3
N. Y., N. H. & H. R.R.	Over Fort-point Channel	1	36	0
"	"	1	41	8
"	"	.	Building**	
"	Over South Bay	1	28	4
"	Dorchester to Quincy	1	35	10
North Beacon-st.	Brighton to Watertown	1	30	0
North Harvard-st.	Brighton to Cambridge	1	36	0
Prison-point	Charlestown to Cambridge	1	36	0
Summer-st.	Over Fort-point Channel	1	50	0
Warren	Boston to Charlestown	1	36	0
West Boston	Boston to Cambridge	1	36	0
Western-ave.	Brighton to Cambridge	1	36	0
"	Brighton to Watertown	1	35	10

* Bridge to be removed during year.

** Width of opening, March 22, 1900, 41 feet 5 inches.

APPENDIX B.

LIST OF ESTIMATE PLANS FURNISHED THE ASSESSMENT
DIVISION OF THE STREET LAYING-OUT DEPARTMENT,
FROM FEBRUARY 1, 1899, TO FEBRUARY 1, 1900.

BOSTON PROPER.

Andrews street. — From East Canton street to East Dedham street.

Public Alley No. 102. — From Marshall street to Creek square.

Public Alley No. 438. — From Arlington street to Berkeley street.

Public Alleys Nos. 439, 440, 441, 442, 443, 444. — From Clarendon street to Massachusetts avenue.

Public Alley No. 702. — From Worcester street to West Springfield street.

Public Alley No. 703. — From Newland street.

Public Alley No. 905. — From Massachusetts avenue.

EAST BOSTON.

Bennington street. — From Chelsea street to Belle Isle inlet.

Wordsworth street. — From Saratoga street to Pope street.

CHARLESTOWN.

Alford street. — From Mystic river to Everett line.

ROXBURY.

Brookline avenue. — From Longwood Entrance to Riverway.

Echo street. — From Columbus avenue to Centre street.

DORCHESTER.

Annabel street. — From Columbia road to Sumner street.

Barry street. — From Quincy street to Richfield street.

Centre avenue. — At Centre street.

Conrad street. — From Sumner street.

Draper street. — From Robinson street to Bowdoin street.

Edison Green. — From Dorchester avenue to Pond street.

Esmond street. — From Blue Hill avenue to Harvard street.
Fowler street. — From Glenway street to McLellan street.
Leonard street. — From Duncan street to Adams street.
Montague street. — From Ashmont street to Roslin street.
Nottingham street. — From Bullard street to Bowdoin avenue.
Rockford street. — From Dudley street to Clifton street.
Rozella street. — From Adams street to Muzzy street.
Seaborn street. — From Centre street to Kenwood street.
Templeton street. — From Dorchester avenue to Adams street.
Thane street. — From Athelwold street.
Wainwright street. — From Centre street to Welles avenue.
Warner street. — From Harvard street to Park street.

WEST ROXBURY.

Congreve street. — From South street to Centre street.
Dresden street. — From Boylston street to Spring Park ave.
Fairview street. — From Proctor street to Mendum street.
Oakview street. — From Centre street.
Rowe street. — From Ashland street to Seymour street.
Stratford avenue. — From Anawan avenue to Clement avenue.
Washington street. — From Morton street to Tower street.
Williams street. — From across railroad tracks to Call street.

APPENDIX C.

TABLE OF ACCIDENT AND OTHER PLANS MADE FOR THE
LAW DEPARTMENT, FROM FEBRUARY 1, 1899, TO FEBRU-
ARY 1, 1900.

BOSTON PROPER.

- Allen street.* — Plan of street at corner of Charter street.
Atlantic avenue. — Plan of street, Eastern avenue and Fleet street.
Atlantic avenue. — Plan of street, Boston, Revere Beach & Lynn Railroad Station.
Barton street. — Plan of street in front of No. 46.
Bedford street. — Plan of street in front of No. 55.
Bradford street. — Plan of street in front of No. 53.
Bromfield street. — Plan of street in front of No. 62.
Buckingham street. — Plan of street in front of No. 28.
Cambridge street. — Plan of street in front of No. 10.
Castle street. — Plan of street near Mayo street.
Causeway street. — Plan of street in front of No. 119.
Causeway street. — Plan of street at corner of Haverhill street.
Charter street. — Plan of street in front of No. 26.
Columbus avenue. — Plan of avenue in front of No. 366.
Columbus avenue. — Plan of avenue in front of Nos. 125 and 135.
Commonwealth avenue. — Plan of avenue in front of No. 482.
Cornhill. — Plan of street in front of No. 70.
Compton street. — Plan of street in front of No. 15.
Court street. — Plan of street in front of No. 92.
Court square. — Plan of square at corner of Court street.
Dartmouth place. — Plan of place in front of No. 3.
Dartmouth street. — Plan of street at Warren avenue.
Friend street. — Plan of street in front of No. 220.
Friend street. — Plan of street in front of No. 220.
Hanover street. — Plan of street in front of No. 154.
Harrison avenue. — Plan of street in front of Nos. 9 and 11.
Harrison avenue. — Plan of street at Boston & Albany Railroad bridge.

- High street.* — Plan of street in front of No. 19.
Huntington avenue. — Plan of avenue at Oxford terrace.
Leverett street. — Plan of street in front of Nos. 86 and 88.
Malden street. — Plan of street in front of No. 13.
Malden street. — Plan of street at Wareham street.
North street. — Plan of street in front of No. 164.
North street. — Plan of street in front of Nos. 256 and 258.
North Grove street. — Plan of street in front of No. 21.
North Russell street. — Plan of street in front of No. 18.
Park street. — Plan of street in front of No. 2A.
Portland street. — Plan of street in front of No. 35.
Portland street. — Plan of street at corner of Sudbury street.
Summer street. — Plan of street at corner of High street.
Temple place. — Plan of street in front of No. 21.
Temple street. — Plan of street in front of No. 7.
Tremont row. — Plan of street in front of No. 22.
Tremont street. — Plan of street in front of No. 468.
Tremont street. — Plan of street in front of No. 482.
Tremont street. — Plan of street in front of No. 378.
Tremont street. — Plan of street at Hotel Touraine.
Tremont street. — Plan of street in front of No. 578.
Trumbull street. — Plan of street near Ivanhoe street.
Village street. — Plan of street in front of No. 95.
Washington street. — Plan of street in front of No. 1008.
Washington street. — Plan of street at corner of West street.
West Newton street. — Plan of street in front of No. 36.
Washington street. — Plan of street in front of No. 598.

SOUTH BOSTON.

- Broadway.* — Plan of street at corner of Dorchester street.
P street. — Plan of street in front of No. 114.

EAST BOSTON.

- Bennington street.* — Plan of street at corner of Byron street.
Brooks street. — Plan of street in front of No. 122.
Meridian street. — Plan of street in front of No. 294.
North Ferry. — Plan of entrance on East Boston side.
Paris street. — Plan of street in front of No. 292.
Saratoga street. — Plan of street at West street, showing grades.
Sumner street. — Plan of street in front of No. 420.

CHARLESTOWN.

- Alford street.* — Plan of street in front of No. 70.
Charlestown street. — Plan of street at new bridge.

- Decatur street.* — Plan of street at corner of Decatur street.
High street. — Plan of street in front of No. 26.
Monument square. — Plan of square in front of No. 21.
Salem street. — Plan of street in front of No. 16.

DORCHESTER.

- Elmo street.* — Plan of street near Erie avenue.
Mill street. — Plan of street at Tenean creek.
Pond street. — Plan of street near Columbia road.
Willowwood street. — Plan of street near No. 26.

ROXBURY.

- Columbus avenue.* — Plan of avenue in front of No. 1142.
Columbus avenue. — Plan of avenue in front of No. 1115.
Dale street. — Plan of street at corner of Mill street.
Highland avenue. — Plan of avenue in front of No. 14.
Ipswich street. — Plan of street over Boston and Albany Railroad.
Kendall street. — Plan of street at corner of Shawmut avenue.
Munroe street. — Plan of street in front of No. 39.
Quincy street. — Plan of street in front of No. 105.
Sterling street. — Plan of street on westerly side.
Warren street. — Plan of street at corner of Zeigler street.
Warren street. — Plan of street in front of No. 341.
Washington street. — Plan of street at corner of Arnold st.

WEST ROXBURY.

- Boynton street.* — Plan of street near No. 41.
Grove street. — Plan of street at corner of Washington street.

BRIGHTON.

- Commonwealth avenue.* — Levels near Malvern street.
Western avenue. — Plan of avenue near Charles-river bridge.

APPENDIX D.

TABLE OF SURVEYS, PLANS AND PROFILES MADE BY THE
SURVEYING DIVISION OF THE ENGINEERING DEPART-
MENT, FROM FEBRUARY 1, 1899, TO FEBRUARY 1, 1900.

BOSTON PROPER.

(North of Massachusetts avenue.)

- Albany street.* — Beach street to Kneeland street. Plan and profile for proposed grade.
- Albany street.* — Oswego street to Curve street. Plan and profile for revised grade.
- Albion street.* — Castle street to Paul street. Plan and profile for revised grade.
- Atlantic avenue.* — (Cove street) Kneeland street to Dorchester avenue. Plan for proposed extension.
- Bartlett place.* — From Salem street westerly. Plan for proposed relocation.
- Battery street.* — Commercial street to the ferry. Plan and profile for laying out and established grade.
- Beach street.* — North-easterly side, South street to Atlantic avenue. Plan and profile for revised grade.
- Beach Street.* — Albany street to Lincoln street. Plan and profile for proposed grade.
- Beach street.* — South-westerly side, Tyler street to Hudson street. Plan and profile for proposed grade.
- Berkeley street.* — Chandler street to Columbus avenue. Plan and profile for revised grade.
- Beverly street.* — South-westerly side, Causeway street to Traverse street. Plan and profile for proposed grade.
- Boylston street.* — Tremont street to Charles street. Plan and profile for proposed relocation of grade.
- Bristol street.* — Plan showing westerly wall Fire Department building and land proposed to be purchased.
- Broad street.* — Central street to Milk street, easterly side. Plan and profile for proposed grade.
- Broad street.* — State street to Blackstone street. Plan for proposed extension.

- Broadway.* — Fort Point channel to New York, New Haven & Hartford Railroad. Plan and profile for revised grade.
- Buckingham street.* — Columbus avenue to Dartmouth street. Plan and profile for widening and revised grade.
- Burbank street.* — Plan and profile for revised grade.
- Cambridge street.* — Corner Charles street. Plan showing widening.
- Castle street.* — Plan and profile for revised grade.
- Cazenove street.* — Plan and profile for revised grade.
- Causeway street.* — Beverly street to Medford street. Plan showing edgestone, car tracks, etc.
- Chambers street.* — Opposite Ashland street. Plan showing proposed relocation.
- Chandler street.* — Tremont street to Berkeley street. Plan and profile for revised grade.
- Chandler street.* — Clarendon street to Berkeley street. Plan and profile for proposed grade.
- Clarendon street.* — Approximate plan of proposed extension.
- Clarendon street.* — Warren avenue to Montgomery street. Plan and profile for proposed grade.
- Clark street.* — Hanover street to North street. Plan and profile for proposed grade.
- Clinton street.* — Corner Fulton street. Plan showing encroachment of steps, etc.
- Clinton street.* — Northerly side, Merchants' row to Blackstone street. Plan and profile for proposed grade.
- Columbus avenue.* — Morgan street to Clarendon street. Plan and profile for revised grade.
- Commercial street.* — Prince street to Hull street. Plan showing edgestone, car tracks, etc.
- Cornhill.* — Corner Scollay square. Plan for Police Department.
- Corning street.* — Shawmut avenue to Porter street. Profile for established grade.
- Creek and Hatters squares.* — Plan showing deeds of abutting estates.
- Dartmouth street.* — Columbus avenue to Huntington avenue. Plan and profile for revised grade.
- Dorchester avenue.* — Plan for proposed new location across Fort Point channel.
- Endicott street.* — Hanover street to Cross street. Plan and profile for proposed grade.
- Exchange street.* — Easterly side. Plan and profile for proposed grade.
- Federal street.* — High street to Summer street. Plan and profile for proposed grade.

- Ferdinand street.* — Tremont street to Fayette street. Plan and profile for revised grade.
- Friend street.* — Sudbury street to Washington street. Plan and profile for proposed grade.
- Hammond avenue.* — Plan showing vicinity of to accompany report on location of the line of.
- Harrison avenue.* — Broadway to Oneida street. Plan and profile for revised grade.
- Harwich street.* — Plan and profile for revised grade.
- High street.* — Southerly corner Federal street. Plan and profile for proposed grade.
- Huntington avenue.* — Copley square to Massachusetts avenue, assessment plan.
- India square.* — Plan and profile for laying out and established grade.
- Irvington street.* — Plan and profile for revised grade.
- John street.* — North-easterly side. Plan and profile for proposed grade.
- Joy street.* — From Myrtle street, north. Plan and profile for proposed grade.
- Kneeland street.* — Albany street to Lincoln street. Plan and profile for proposed grade.
- Knox street.* — Bay street to Church street. Plan and profile for proposed grade.
- McLean and Chambers streets.* Plan to show street line.
- Motte street.* — Plan and profile for revised grade.
- Music Hall place.* — Plan to show points at which wall of building was plumbed down.
- Myrtle street.* — Joy street to South Russell street. Plan and profile for proposed grade.
- Newland street.* — West Brookline street to West Newton street. Plan and profile for laying out and established grade.
- North street.* — Fleet street to Clark street. Plan and profile for proposed grade.
- North Bennet street.* — Plan of estate adjoining playground taken by the city.
- North Grove street.* — Tracing of city property for Board of Health.
- Oneida street.* — From Albany street. Plan and profile for revised grade.
- Park street.* — Plan and profile for proposed grade.
- Paul street.* — Tremont street to Albion street. Plan and profile for established grade.
- Pinckney street.* — Joy street to Anderson street. Plan and profile for proposed grade.

- Pleasant street.* — Tremont street to Shawmut avenue. Plan and profile for established grade.
- Prince street.* — Plan of addition to Hancock School lot.
- Province court.* — Plan and profile for laying out and established grade.
- Public Alley No. 101.* — (Chair Alley) Plan for relocation of line.
- Public Alley No. 103A.* — Fulton street to North street. Plan and profile for laying out and established grade.
- Public Alley No. 302.* — Off Park street. Plan and profile for laying out and established grade.
- Purchase street.* — Easterly corner Federal street. Plan and profile for proposed grade.
- Salem street.* — Near Bartlett place. Plan for proposed relocation.
- Seneca street.* — Albany street to Harrison avenue. Plan and profile for revised grade.
- Shawmut avenue.* — At Pleasant street. Plan and profile for proposed grade.
- Shawmut avenue.* — Cobb street to Corning street. Plan and profile for revised grade.
- Snowhill street.* — Easterly corner Prince street. Plan and profile for proposed grade.
- Snowhill street.* — Near Prince street. Plan for proposed relocation.
- Stuart street.* — Assessment plan.
- Summer street.* — Southerly side, South street to Atlantic avenue. Plan and profile for proposed grade.
- Tremont street.* — No. 175. Plan and profile for proposed grade.
- Tremont street.* — Lucas street to Corning street. Plan and profile for revised grade.
- Tremont street.* — At Pleasant street. Plan and profile for proposed grade.
- Truro street.* — At Harwich street. Plan and profile for revised grade.
- Village street.* — Compton street to Dover street. Plan and profile for proposed grade.
- Walnut street.* — Plan and profile for proposed grade.
- Warren avenue.* — North-easterly side, Clarendon street to Berkeley street. Plan and profile for proposed grade.
- Warren avenue.* — Near Clarendon street. Plan of city lot for engine-house.
- Warrenton street.* — North-easterly side, near Washington street. Plan for line.
- Washington street.* — North-westerly side, Winter street to Bromfield street. Plan and profile for proposed grade.

Washington street. — Cobb street to Corning street. Plan and profile for revised grade.

Water street. — Congress street to Kilby street. Plan and profile for proposed grade.

Way street. — Plan and profile for revised grade.

West Newton street. — Washington street to Shawmut avenue. Plan and profile for proposed grade.

Winchester street. — Pleasant street to Church street. Plan and profile for proposed grade.

Yarmouth street. — Plan and profile for revised grade.

EAST BOSTON (INCLUDING BREED'S ISLAND).

Chelsea street. — North side, opposite Glendon place. Plan showing elevations and grades.

Chelsea street. — North side, opposite Glendon place. Plan of land purchased by the City of Boston from Francis Lally for the use of the Street Department.

Chelsea street. — Plan of lots owned by the City of Boston to be sold at public auction

Cowper street. — Byron street to Rice street. Plan and profile.

Eutaw street. — Chapman School lot. Plan showing elevations for Public Building Department.

Lewis street. — Marginal street to South Ferry. Plan and profile of relocation and established grade.

Marion street. — Plan of lots owned by the City of Boston to be sold at public auction.

Morris street. — Plan of lots owned by the City of Boston to be sold at public auction.

Northwood street. — Leyden street to Gladstone street. Plan and profile of proposed laying out and established grade.

Paris street. — Plan of lots owned by the City of Boston to be sold at public auction.

Selma street. — Gladstone street to Orient avenue. Plan and profile of proposed laying out and established grade.

SOUTH BOSTON.

Bigelow School-house. — Lot, corner W. Fourth street and E street. Plan for grading.

Columbia road. — Between I and P streets. Survey.

Dixfield street. — Between Old Harbor street and Covington street. Plan and profile for laying out and established grade.

National street. — No. 13. Plan of land for ambulance station.

Summer street. — Between Fort Point channel and A street.
Plan for revising grade.

Summer street approach. — Between Summer street and A street. Plan for revising grade.

CHARLESTOWN.

Alford street. — Charlestown. Playground to Everett line.
Plan and profile of proposed relocation and established grade.

Bow street. — Washington street to City square. Plan and profile of proposed widening and relocation and established grade.

Crescent street. — Cambridge street to Roland street. Plan and profile of proposed laying out and established grade.

Devens street. — Rutherford avenue to Washington street.
Plan and profile of proposed widening, and relocation and established grade.

Rutherford avenue. — Chapman street to Devens street.
Plan and profile of proposed widening, relocation, and established grade.

Summer street. — Warren School lot. Plan of land taken by City of Boston for school purposes.

ROXBURY.

(South of Massachusetts avenue.)

Aberdeen street. — Beacon street to railroad. Plan and profile of laying out and established grade.

Allerton street. — Magazine street to Gerard street. Plan and profile for laying out and established grade.

Amory street. — Centre street to Bragdon street. Plan and profile for widening and established grade.

Brookline avenue. — Audubon road to Brookline line. Plan and profile for widening and established grade.

Carlow street. — (Formerly Chadwick place) Chadwick street to Albany street. Plan and profile for laying out and established grade.

Charles river. — Plan showing regatta course.

Conant street. — Huntington avenue to St. Alphonsus street.
Plan and profile for proposed grade.

Copeland street. — Benton avenue to Louise park. Plan and profile for revised grade.

Darling street. — Calumet street to Hillside street. Plan and profile for laying out and established grade.

- Davenport street.* — Tremont street to Columbus avenue.
Plan and profile for laying out and established grade.
- Echo street.* — Centre street to Columbus avenue. Plan and profile for laying out and established grade.
- Evergreen street.* — From end of street to Huntington avenue.
Plan and profile for laying out and established grade.
- Farnham street.* — Reading street to Magazine street. Plan and profile for laying out and established grade.
- Highland street.* — South side Millmont street to Dorr street.
Plan and profile for proposed grade.
- Humboldt avenue.* — At Seaver street. Plan and profile for revised grade.
- Huntington avenue.* — From Massachusetts avenue to Brookline. Plan showing estates for assessment.
- Island street.* — Gerard street to Massachusetts avenue. Plan and profile for laying out and established grade.
- Kenwood road.* — Huntington avenue to Brookline avenue.
Plan and profile for laying out and established grade.
- Linwood street.* — Highland street to Centre street. Plan and profile for proposed grade.
- Millmont street.* — South-east side Highland street. Plan and profile for proposed grade.
- Northampton and Albany streets.* Plan showing widening on westerly corner.
- Northampton and Albany streets.* Plan showing encroachment on westerly corner.
- Northfield street.* — Plan and profile for proposed grade.
- Parker street.* — Corner of Willis street. Plan of estate for school purposes.
- Preissing place.* — Addition to plan and profile for laying out and established grade.
- Prentiss place.* — Tremont street to Halleck street. Plan and profile for revised grade.
- Public Alley No. 801.* — Gainsboro' street to St. Stephens street. Plan and profile for laying out and established grade.
- Public Alley No. 802.* — Camden street to Northampton street.
Plan and profile for laying out and established grade.
- Public Alley No. 803.* — Camden street to Northampton street.
Plan and profile for laying out and established grade.
- Public Alley No. 804.* — From 803 to 805. Plan and profile for laying out and established grade.
- Public Alley No. 805.* — Camden street to Northampton street.
Plan and profile for laying out and established grade.
- Public Alley No. 806.* — Northampton street to Camden street.
Plan and profile for laying out and established grade.

- Public Alley No. 905.* — Massachusetts avenue to Marlboro' street. Plan and profile for laying out and established grade.
- Public Alley No. 906.* — Queensberry street to Peterboro' street. Plan and profile for laying out and established grade.
- Rockford street.* — From Dudley street to Clifton street. Plan showing estates for assessment.
- Ruggles street.* — Cabot street to Haskins street. Plan and profile for proposed grade.
- Ruggles street.* — Tremont street to Leon street. Plan and profile for revised grade.
- Seaver street.* — North corner of Humboldt avenue. Profile of gutter, and sidewalk for revised grade.
- Station street.* — Tremont street to Halleck street. Plan and profile for revised grade.
- Street Nos. 194 and 198.* — Parker street to Fenway. Plan and profile for established grade.
- Street No. 1342.* — Hutchings street to Seaver street. Plan and profile for laying out and established grade.
- Swett street.* — Albany street to Dorchester avenue. Plan and profile for laying out and established grade.
- Tremont street.* — Columbus avenue to Parker street. Plan and profile for revised grade.
- Tremont street.* — Alphonsus street to Burney street. Plan showing locations of poles, curb, etc.
- Warwick street.* — Ruggles street to Marble street. Plan and profile for proposed grade.
- Whittier street.* — Tremont street to Columbus avenue. Plan and profile for revised grade.
- Winthrop street.* — Dennis street to Brook avenue. Plan and profile for laying out and established grade.

DORCHESTER.

- Barry street.* — Quincy street to Richfield street. Plan and profile for laying out and established grade.
- Birch street.* — Callender street to Lauriat avenue. Plan and profile for laying out and established grade.
- Bird street.* — Columbia road to Hancock street. Plan and profile for laying out and established grade.
- Blackwell street.* — Bowman street to Neponset avenue. Plan and profile for laying out and established grade.
- Brunswick street.* — Blue Hill avenue to Columbia road. Plan and profile for laying out and established grade.
- Centre avenue.* — Junction of Centre street. Plan and profile for relocation.

- Conrad street.* — Formerly Roland park. Plan and profile for laying out and established grade.
- Davenport avenue.* — Columbia road to Virginia street. Plan and profile for laying out and established grade.
- Don street.* — Callender street to Lauriat avenue. Plan and profile for laying out and established grade.
- Elmont street.* — Faxon street to Waterlow street. Plan and profile for laying out and established grade.
- Erie street.* — Glenway street to McLellan street. Plan and profile for revising grade.
- Florida street.* — Ashmont street to Templeton street. Plan and profile for laying out and established grade.
- Fowler street.* — Formerly Read street, Glenway street to McLellan avenue. Plan and profile for laying out and established grade.
- Freeport street.* — Junction of Neponset avenue. Plan and profile for relocation.
- Hamilton street.* — At Columbia road. Plan showing proposed discontinuance.
- Hamilton street.* — Columbia road to Mt. Everett street. Plan and profile for revising grade.
- Hancock street.* — Columbia road to Freeport street. Plan and profile for relocation.
- Kirwin street.* — Bernard street to Talbot avenue. Plan and profile for laying out and established grade.
- Mascoma street.* — Lawrence avenue to Quincy street. Plan and profile for laying out and established grade.
- Morton street.* — Harvard street to River street. Plan and profile for relocation.
- Moultrie avenue.* — Allston street to Washington street. Plan and profile for laying out and established grade.
- Mt. Everett street.* — At Hamilton street. Plan and profile for revising grade.
- Norfolk street.* — At north-westerly corner Morton street. Plan of proposed school lot.
- Normandy street.* — Formerly Grove street. Plan and profile for laying out and established grade.
- Rockville street.* — Blue Hill avenue to Oakland street. Plan and profile for laying out and established grade.
- Seaborn street.* — Centre street to Kenwood street. Plan and profile for laying out and established grade.
- Shepton street.* — Dorchester avenue to Florida street. Plan and profile for laying out and established grade.
- Shoreham street.* — Carson street to Dorchester avenue. Plan and profile for laying out and established grade.
- Silloway street.* — Mather street to Melville avenue. Plan and profile for laying out and established grade.

- Sewall street.* — Neponset avenue to Pope's Hill street. Plan and profile for laying out and established grade.
- Stratford street.* — Greenbrier street to Waldeck street. Plan and profile for laying out and established grade.
- Thatcher road.* — Cushing avenue to Stoughton street. Plan and profile for laying out and established grade.
- Waldeck street.* — Park street to Tonawanda street. Plan and profile for laying out and established grade.
- Westville street.* — Bowdoin street to Geneva avenue. Plan and profile for revising grade.
- Whitman street.* — Dunbar avenue to Norfolk street. Plan and profile for laying out and established grade.
- Willowwood street.* — Lauriat avenue to Norfolk street. Plan and profile for laying out and established grade.

WEST ROXBURY.

- Ashland avenue.* — Cass street to Summer street. Plan and profile of laying out and established grade.
- Birch street.* — Corinth street to Brandon street. Profile for grade.
- Canterbury street.* — Blue Hill avenue to Morton street. Plan and profile showing grade.
- Centre street.* — From Walter street to beyond Arnold Arboretum. Plan and profile for grade.
- Colberg avenue.* — Beech street to Belgrade avenue. Plan and profile of laying out and established grade.
- Cornell street.* — Near Kittredge street. Plan showing encroachments on northerly side of street.
- Dudley avenue.* — Walworth street to South street. Plan and profile of relocation and established grade.
- Eldridge road.* — From Hyde Park avenue to beyond Nathan street. Plan and profile of laying out established grade.
- Fairview street.* — Proctor street to Mendum street. Plan and profile of laying out and established grade.
- Forest Hill street.* — From opposite Keyes street, 300 feet southerly. Profile for grade.
- Gormley street.* — St. Rose street to South street. Plan and profile of laying out and established grade.
- Guernsey street.* — South street to Central street. Plan and profile of laying out and established grade.
- Haverford street.* — Cornwall street to Boylston street. Plan and profile of laying out and established grade.
- Nathan street.* — Eldridge road to Patten street. Plan and profile of laying out and established grade.
- Oakview terrace.* — Southerly side. Plan showing encroachments.

Park street. — Northerly side, at Centre street. Profile for grade.

Patten street. — Hyde Park avenue to Bourne street. Plan and profile of laying out and established grade.

Pond street. — Prince street to Eliot street. Plan and profile for grade.

Rodman street. — Wachusett street to Patten street. Plan and profile of laying out and established grade.

Sigourney street. — From Walnut avenue to beyond Robeson street. Plan and profile of relocation and established grade.

Spring street. — At junction with Centre street. Plan showing location of trees.

Summer street. — Autumn street to Cass street. Plan and profile of laying out and established grade.

Temple street. — Ivory street to Centre street. Plan and profile of laying out and established grade.

Walk Hill street. — Morton street to Washington street. Plan and profile of relocation and established grade.

Walnut avenue. — Columbus avenue to Sigourney street. Plan and profile of relocation and established grade.

Washington street. — Morton street to Tower street. Plan and profile of relocation and established grade.

Weld street. — Corey street to Arnold street. Profile showing grade.

Westbourne street. — Beech street to Cornell street. Plan and profile of laying out and established grade.

Woodman street. — Custer street to Jamaica street. Plan and profile for revising grade.

BRIGHTON.

Cambridge street. — Brighton avenue to Washington street. Plan and profile of relocation and established grade.

Chestnut Hill Park. — At Commonwealth avenue. Plan of land for Park taking.

Commonwealth avenue. — Brighton avenue to Warren street. Plan and profile of centre roadway for revising grade.

Commonwealth avenue. — Wallingford road to Chestnut Hill avenue. Plan and profile for revising grade.

Dighton place. — Winship school lot. Plan of lot for Public Buildings Department.

Essex street. — Commonwealth avenue to Cambridge. Plan and profile of centre of roadway.

High Rock Way. — Allston Heights to Webster street. Profile for grade.

North Harvard street. — On both sides of Charles river. Plan and profile of centre of roadway.

South street. — Commonwealth avenue to Chestnut Hill avenue. Plan and profile of relocation and established grade.

Telford street. — From Western avenue. Plan for construction assessment.

Webster avenue. — At school lot. Plan showing encroachment of building.

APPENDIX E.

LIST OF STREETS WHERE FRONTAGES HAVE BEEN OBTAINED FOR THE SEWER DIVISION OF THE STREET DEPARTMENT, FOR SEWER ASSESSMENTS, FROM FEBRUARY 1, 1899, TO FEBRUARY 1, 1900.

BOSTON PROPER.

Atlantic avenue. — Between Summer street and Kneeland street.

Belvidere street. — Between Dalton street and West Newton street.

Charlestown street. — Whole length.

Clinton street. — Between Fulton street and Commercial street.

Cross street. — Between Commercial street and Endicott street.

Dorchester avenue. — Between Summer street and Mt. Washington avenue.

Endicott street. — Between Cross street and Stillman street.

Fulton street. — Between Clinton street and Cross street.

Haverhill street. —

Kneeland street. — Cove street to South street.

Malden street and Wareham street. — Corner of Harrison avenue.

Public Alley No. 101.

Public Alley Nos. 401, 402, 403, 404, 405.

Public Alley No. 419.

Public Alley No. 431.

Public Alley No. 437.

Public Alley No. 702, 703.

Stillman street. — Between Charlestown street and Endicott street.

Summer street. — Between Atlantic avenue and Dorchester avenue.

South street. — Between Kneeland street and Harvard street.

Stevens street. — Between Shawmut avenue and Lincoln place.

Travers street. —

West Brookline street. — Between Washington street and Shawmut avenue.

SOUTH BOSTON.

- Bullock street.* — Between C street and D street.
Columbia road. — Between P street and Q street.
Dexter street. — Between Dorchester avenue and Ellery street.
Dorchester avenue. — Between D street and Dexter street.
E street. — Between Bowen street and West Fifth street.
E street. — Between West First street and Summer street.
Ellery street. — Between Dexter street and Swett street.
Ellery street. — Between Swett street and Boston street.
H street. — Between East Eighth street and Columbia road.
K street. — Between East Ninth street and Columbia road.
Kemp street. — Between Dorchester avenue and Columbia road.
Passageway. — Between Congress street and Summer street, from A street to Fort Point Channel.
Peters street. — Between East Sixth street and East Seventh street.
Q street. — Between East Sixth street and tidewater.
Summer street. — Between E street and L-street bridge.

EAST BOSTON.

- Bennington street.* — Prescott street to Revere line.
Chaucer street. — Curtis street to Moore street.
Harve street. — Decatur street to a point about 360 feet east.
Pope street. — Saratoga street to Byron street.
Public Alley No. 2001. — Webster street to Marginal street.

CHARLESTOWN.

- Beach street.* — Main street to Boston & Lowell Railroad.
Carter street. — Cambridge street to Roland street.

ROXBURY.

- Adams place.* — From Washington street to Williams street.
Armory street. — From Bragdon street to School street.
Astor street. — From Massachusetts avenue to Hemenway street.
Beech Glen street. — From Highland street to Fort avenue.
Benton street. — From Tremont street to Columbus avenue.
Bragdon street. — From Washington street to Amory street.
Gray street. — From Washington street to Columbus avenue.
Columbus avenue. — From Dimock street to Bragdon street.
Devon street. — From Blue Hill avenue to Columbia road.

- Fairweather street.* — From Harrison avenue to Reed street.
Fellows street. — From Hunneman street to Webber street.
Francis street. — From Huntington avenue to Brookline avenue.
Halleck street. — From Ruggles street to Ward street.
Harold street. — From Walnut avenue to Munroe street.
Haskins street. — From Ruggles street to Vernon street.
Hemenway street. — From Boylston street to Huntington avenue.
Highland street. — From Cedar street to Millmont avenue.
Hollander street. — From Walnut avenue to Humboldt avenue.
Ipswich street. — From Boylston street to Boylston-street extension.
Kenwood road. — From Huntington avenue to Brookline avenue.
Linden Park street. — From Lamont street to Stony brook.
Newark street. —
Passageway. — Between Massachusetts avenue, Hemenway street, Boylston street, and Haviland street.
Riverway. — At Longwood avenue.
Ruggles street. — From Rogers avenue to Halleck street.
St. Stephen street. — From Gainsborough street to Bryant street.
Seaver street. — From Humboldt avenue to Elm Hill avenue.
Shirley street. — Extension from Norfolk avenue to Massachusetts avenue.
Smith street. — From Phillips street to St. Alphonsus street.
Sonoma street. — From Maple street to Elm Hill avenue.
Walnut avenue. — From Harrishof street to Townsend street.
Waumbeck street. — From Humboldt avenue to Harold street.
Wensley street. — From Heath street to Bickford avenue.

DORCHESTER.

- Adams street.* — From Ruth street to Cedar Grove Cemetery.
Alexander street. — From Oleander street to 600 feet west.
Alpha road. — From Greenbrier street to Waldeck street.
Annabel street. — From Columbia road to Summer street.
Ashmont street. — From Train street to Neponset avenue.
Atherstone street. — From Bailey street to Fuller street.
Barry street. — From Quincy street to Richfield street.
Bellevue street. — From Quincy street to Trull street.
Bernard street. — From Harvard street to Talbot avenue.
Birch street. — From Callender street to Lauriat avenue.
Blackwell street. — From Bowman street to Neponset avenue.

- Bloomfield street.*—From Geneva avenue to Greenbrier street.
- Blue Hill avenue.*—From River street to Walk Hill street.
- Bowdoin street.*—From Hamilton street to Quincy street.
- Bowman street.*—From Blackwell street south.
- Burrell street.*—From Clifton street to Norfolk avenue.
- Burt avenue.*—From Ashmont street to Washington street.
- Butler street.*—From Adams street to Richmond street.
- Callender street.*—From Don street to Tucker street.
- Carlos street.*—From Callender street to Lauriat avenue.
- Centre street.*—From Centre avenue to 800 feet east of Dorchester avenue.
- Coffey street.*—From Neponset avenue to Newhall street.
- Columbia road.*—From Blue Hill avenue to Dudley street.
- Conrad street.*—From Columbia road to Summer street.
- Corbet street.*—From Evans street to Nelson street.
- Ditson street.*—From Charles street to Westville street.
- Dorchester avenue.*—From Columbia road to Mt. Vernon street.
- Downer court.*—From Hancock street to 200 feet northwest.
- Elmo street.*—From Erie street to Erie street.
- Esmond street.*—From Blue Hill avenue to Harvard street.
- Evans street.*—From Capen street to Morton street.
- Evelyn street.*—From Blue Hill avenue to Norfolk street.
- Fairmount avenue.*—From Morton street to Washington street.
- Fairview street.*—From Frost avenue to Train street.
- Faxon street.*—From Elmont street to Washington street.
- Ferndale street.*—From Norfolk street to Southern avenue.
- Florida street.*—From King street to Templeton street.
- Fowler street.*—From Glenway street to McLellan street.
- Fremont street.*—From Norfolk street to River street.
- Frost avenue.*—From Boutwell street to Fairview street.
- Grove street.*—From Blue Hill avenue to Perth street.
- Greenbrier street.*—From Bloomfield street to Park street.
- Hamilton street.*—From Bowdoin street to Homes avenue.
- Hancock street.*—From Bowdoin street to Columbia road.
- Harvard avenue.*—From Harvard street to Washington street.
- Harvard street.*—From Bernard street to Wales street.
- Hewins street.*—From Columbia road to Erie street.
- Homes avenue.*—From Hamilton street to Topliff street.
- Hopkins street.*—From Evans street to Corbet street.
- Huttoon street.*—From Butler street to Medway street.
- Idaho street.*—From Manchester street to River street.

- Lauriat avenue.* — From Norfolk street to Tucker street.
Lauriat street. — From Lauriat avenue to Callender street.
Leedsville street. — From Adams street to Dorchester avenue.
Lonsdale street. — From Adams street to Dorchester avenue.
Lyons street. — From Callender street to Lauriat avenue.
Magnolia street. — At Magnolia square.
Magnolia square. — Off Magnolia street.
Malvern street. — From Adams street to Milton street.
Maryland street. — From Bay street to Savin Hill avenue.
Massasoit avenue. — From New England avenue to New England Railroad.
Melbourne street. — From Centre street to Welles avenue.
Mellen street. — From Montague street to Ocean street.
Merlin street. — From Athelwold street to Park street.
Middleton street. — From Norfolk street to Wildwood street.
Milton street. — From Adams street to Malvern street.
Nelson street. — From Norfolk street to Selden street.
Neponset avenue. — From Bertram street to Minot street.
Nightingale street. — From Bernard street to Talbot avenue.
Norfolk street. — From Evelyn street to Walk Hill street.
Nottingham street. — From Bowdoin avenue to Bullard street.
Oak avenue. — Off Plain street.
Oakridge street. — Off Morton street.
Park street. —
Plain street. — From Chickatawbut street to Pierce street.
Peverell street. — From Salcombe street to Sawyer avenue.
Quincy street. — From Blue Hill avenue to Perth street.
Raven street. — From Crescent avenue.
Rozella street. — From Adams street to Muzzy street.
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Shafter street. — From Faxon street to Waterlow street.
Shelton street. — From Adams street to Bruce street.
Spencer street. — From Park street to Wheatland avenue.
Spencer street. — From Talbot avenue to Wheatland avenue.
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Stanwood street. — From Blue Hill avenue to Columbia road.
Talbot avenue. — From Blue Hill avenue to Norfolk street.
Thane street. — From Athelwold street to Park street.
Tonawanda street. — From Geneva avenue to Greenbrier street.
Torrey street. — From Learnard street to Washington street.
Trescott street. — From Faxon street to Harvard street.
Walk Hill street. — From Norfolk street to Tileston avenue.
Warner street. — From Harvard street to Park street.
Washington street. — From Dorchester avenue to Ruggles place.
Waterlow street. — From Harvard street to Harvard street.

- Wentworth street.* — From Norfolk street to Torrey street.
West Selden street. — From Manchester street to Morton street.
White terrace. — From Jones avenue to Lauriat avenue.
Woodcliff street. — From Howard avenue.

WEST ROXBURY.

- Alder street.* — From Mt. Vernon street to Keith street.
Angell street. — From Blue Hill avenue to Canterbury street.
Anson street. — From South street to Percy street.
Beech street. — From Newburg street to Westbourne street.
Caldar street. — From Blue Hill avenue to Canterbury street.
Catherine street. — From Bourne street to Florence street.
Congreve street. — From South street to Centre street.
Corey street. — From Ruskin street to beyond Weld street.
Corey street. — At Henshaw terrace.
Dent street. — From Mt. Vernon street to beyond Roberts avenue.
Dent street. — From Jordan street to Pleasant street.
Farquhar street. — From South street to Centre street.
Fletcher street. — From South street to Centre street.
Florence street. — From Ridge street to Ashland street.
Glenham street. — From Harwood street to La Grange street.
Harrison street. — From Florence street to end.
Harwood street. — From Glenham street to Lassell street.
Haverford street. — From Cornwall street to Germania street.
Hubbard street. — From Lamartine street to Chestnut avenue.
Ivory street. — From Dent street to Temple street.
Keith street. — From Alder street to Libbey street.
La Grange street. — From Weld street to Glenham street.
Lassell street. — At Harwood street.
Marmion street. — From Germania street to Cornwall street.
Morrison street. — From Selwyn street.
Mt. Vernon street. — From Alder street to Temple street.
Newburg street. — From Belgrade avenue to Beech street.
Park street. — From Centre street to Montview street.
Percy street. — From Anson street to St. Mark street.
Perham street. — From Mt. Vernon street to end of street.
Perkins street. — From Centre street to Jamaica way.
Proctor street. — From Fairview street to Walter street.
Rosemary street. — From South street.
Sedgewick street. — From Elm street, westerly.
Selwyn street. — From Walter street to Arundel street.
Sherwood street. — From Ashland street to Florence street.

South street. — At Dudley avenue.

South street. — (Substitute way) from Brandon street to South street.

St. Mark street. — From South street to Percy street.

Temple street. — From Mt. Vernon street to railroad.

Wachusett street. — From Walk Hill street to Varney street.

Walter street. — From Proctor street to Ashfield street.

Walter street. — From Selwyn street to Mendum street.

Weld street. — From Gould street to Dwinell street.

Westbourne street. — From Beech street to Cornell street.

Winslow street. — From Dent street to Perham street.

Woodlawn street. — From Hyde Park avenue to Forest Hills Cemetery.

Woodside avenue. — From Washington street to Forest Hills street.

BRIGHTON.

Allston street. — From Commonwealth avenue to Warren street.

Cambridge street. — From Windom street to Charles river.

Chester street. — From Brighton avenue to Commonwealth avenue.

Chiswick road. — From Chestnut Hill avenue to Englewood avenue.

Commonwealth avenue. — From Strathmore road to Chiswick road.

Cypress street. — From Dustin street to Murdock street.

Empire street. — From North Harvard street to Sorrento street.

Hano street. — From Cambridge street to Hano street.

Hardwick street. — From Dunboy street to Bigelow street.

Harriet street. — From Parsons street, westerly.

Kilsyth road. — From Lanark road to Colliston road.

Kinross road. — From Commonwealth avenue to Sutherland road.

Lanark road. — From Sutherland road to Kinross road.

Leicester street. — From Surrey street to Bennett street.

North Harvard street. — From Cambridge street to Parker avenue.

North Harvard street. — From Western avenue to Charles river.

Orkney road. — From Strathmore road to Ayr road.

Proposed street. — From Faneuil street to Harriet street.

Selkirk road. — From Chiswick road to Kilsyth road.

Sparhawk street. — At Murdock street and Cambridge street.

Sutherland road. — From Beacon circle to Englewood avenue.

Telford street. — From Western avenue to Charles river reservation.

Union street. — From La Rose place to beyond Washington street.

Warren street. — From Cambridge street easterly.

Washington street. — From Union street to Commonwealth avenue.

APPENDIX F.

ENGINEERING DEPARTMENT PROPERTY SCHEDULE, MAIN OFFICE.

1 horse.	11,685 plans engineering works, loose.
2 carriages.	14 volumes plans engineering works, bound.
1 sleigh.	Photographs of engineering works..
2 harnesses.	1 microscope.
3 robes.	1 mecurial barometer.
Instruments for drawing.	1 aneroid barometer.
Instruments for surveying, as fol- lows:	1 holosteric barometer.
2 Temple transits	1 set hydrometers.
6 Buff & Berger transits.	1 hygrometer.
1 Berger & Son transit.	1 pair field glasses.
8 Gurley transits.	3 typewriters.
1 Keuffie & Esser transit.	2 dynamometers.
2 Temple levels.	1 pantagraph.
4 Buff & Berger levels.	2 calculating machines.
7 Gurley levels.	1 volt meter.
14 Boston rods.	1 comptometer.
6 New York rods.	2 thermophones.
8 Troy rods.	2 cameras.
2 Philadelphia rods.	1 planimeter.
Apparatus for blue printing.	1 Bourdon pressure gauge.
Cases for plans and books.	
Reference library, 1,250 volumes.	

SURVEYING DIVISION.

2 Temple transits.	7 Buff & Berger levels.
1 Moody transit.	1 Moody level.
2 Buff & Berger transits.	18 Boston rods.
2 Berger & Sons transits.	5 pipe rods.
1 Stackpole transit.	29,664 plans.
1 Troughton & Sims transit.	4,470 lithographed maps.

ARCHITECTURAL DIVISION.

1 horse.	1 Remington typewriter.
1 Goddard buggy.	Miscellaneous drawing instru- ments.
1 open buggy.	650 plans in filing cases in store- room.
1 sleigh, harnesses, robes, stable blankets, etc.	

APPENDIX G.

Elevations referred to Boston City base. (The city base is 0.64 feet below mean low tide.)

Feet.

- 0.00 City base.
- 15.66 Highest tide, April 16, 1851.
- 15.33 Coping dry dock, Charlestown Navy Yard.
- 12.04 Greatest elevation of high tide, per United States Tide Tables, November 7-8 and December 6, 1900 ($11.4 + 0.64$) = 12.04.
- 7.94 Least elevation of high tide, per United States Tide Tables, July 7 and December 16, 1900 ($7.3 + 0.64$) = 7.94.
- 2.54 Greatest elevation of low tide, per United States Tide Tables, May 8, June 5, July 7, and August 5, 1900 ($1.9 + 0.64$) = 2.54.
- 1.16 Least elevation of low tide, per United States Tide Tables, November 7, 1900 ($-1.8 + 0.64$) = — 1.16.
- 0.64 Mean low tide.
- 5.00 Piles cut off for building.
- 9.91 Water works base (approximate tide-marsh level).
- 4.98 Cambridge City base.
- 0.38 South Boston flats base.

NOTE. — Cambridge City base is 4.98 feet below Boston City base. The elevation of the tide on November 27, 1898, was 14.75.

APPENDIX H.

ENGINEERING DEPARTMENT ANNUAL REPORTS, 1867-1899.

No. of Reports.	For the Year.	Year Published and No. City Document.	No. of Reports.	For the Year.	Year Published and No. City Document.
First.....	*1867	1868 — 22	Twentieth.....	*1886	1887 — 38
Second and Third.....	1868-69	1870 — 14	Twenty-first.....	1887	1888 — 39
Fourth.....	1870	1871 — 15	Special report.....	1888	1888 — 117
Fifth and Sixth.....	*1871-72	1873 — 23	Twenty-second.....	1888	1889 — 38
Seventh.....	*1873	1874 — 20	Twenty-third.....	1889	1890 — 39
Eighth.....	1874	1875 — 19	Twenty-fourth.....	*1890	Executive Department Report, Document 1, Part I. 1891.
Ninth.....	1875	1876 — 24			1892 — 11
Tenth.....	*1876	1877 — 15	Twenty-fifth.....	1891	1893 — 10
Eleventh.....	*1877	1878 — 20	Twenty-sixth.....	1892	1894 — 10
Twelfth.....	*1878	1879 — 22	Twenty-seventh.....	1893	1895 — 10
Thirteenth.....	*1879	1880 — 33	Twenty-eighth.....	1894	1896 — 10
Fourteenth.....	*1880	1881 — 25	Twenty-ninth.....	1895	1897 — 10
Fifteenth.....	1881	1882 — 52	Thirtieth.....	1896	1897 — 10
Sixteenth.....	1882	1883 — 53	Thirty-first.....	1897	1898 — 12
Seventeenth.....	*1883	1884 — 55	Thirty-second.....	1898	1899 — 12
Eighteenth.....	*1884	1885 — 54	Thirty-third.....	1899	1900 — 14
Nineteenth.....	*1885	1886 — 41			

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